The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

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Contents

NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Chemical Works Councils

LAST week we noted (incidentally a week in advance of any other chemical contemporary) the principal points in Lord Melchett's speech to the second annual meeting of Imperial Chemical Industries. A more detailed report of what the Chairman and Sir Harry McGowan said appears elsewhere in this issue. This week the report reaches us of an I.C.I. gathering of even more interest from some points of view, and scarcely less important in the interests of the company—namely, the meeting between Lord Melchett and his colleagues and nearly 900 delegate members of works councils representing the 53,000 workers employed in I.C.I. works, who themselves hold £850,000 shares in the undertaking. The first elections for the 71 works councils, we understand, were completed recently, and the interest displayed by the workers can be judged from the fact that there were only 56 unopposed returns out of a total of 287 wards, while the percentage of voting was 92·9. The proceedings, we learn, were of a very cordial character. In the morning the members were conducted over Imperial Chemical House, and in the evening they were entertained at the Coliseum, where, after the performance, there was a remarkable demonstration of goodwill towards the Chairman and the board.

Lord Melchett, in his speech to the delegates, illustrated an aspect of his own character to which his colleagues often testify, but which, in the enormous variety of his interests, is apt to be overlooked—namely, his personal kindness of heart and his constant concern for the human factor. Among many notable sayings in the address some are worthy of being inscribed in stone, like the portraits of the great chemical characters that adorn the building. "We are all fundamentally human beings," he declared. "The time has altogether gone when some old-fashioned people imagined that you could simply give orders blindly and expect them to be blindly obeyed. You want people now of more intelligence. People have become better educated. We do not want our men to be machines; we want machines to be machines and men to be men." His assurance that the works councils scheme will in no way cut across the company's relations with the trade unions gains in emphasis from being re-affirmed by Mr. Henry Mond, the director especially responsible for the Labour Department. The speeches of the men's representatives, and of other directors, such as Lord Reading and Sir Harry McGowan, all pointed to a serious desire to make the new labour policy a real success and a standard for industry generally.

The March Trade Returns

FOR the moment, there is a slight pause in the advance which, month by month, for some time past, has been shown in the progress of the chemical industry as demonstrated in the Board of Trade returns. The check is not of a serious nature: the value of exports of chemicals, dyes, drugs, and colours in March, 1929, was about £38,000 less than that of March, 1928; and in any case this is more than offset by a decrease in the value of imports of nearly £117,000. The reason is obscure, though possibly the severe weather of the earlier part of the year, which certainly had some effect on the February trade, was one of the factors involved.

As regards the details, and dealing first with imports, there was a notable increase in the imports of potassium compounds, which rose from 317,843 cwt. in March 1928 to 400,594 cwt. in March 1929; and in the imports of sodium nitrate, which rose from 276,576 cwt. to 374,062 cwt. There was also an expansion in the imports of intermediate coal tar products from 10 cwt. to 342 cwt. As regards exports, sulphuric acid dropped from 14,471 cwt. to 1,825 cwt.; glycerine from 20,225 cwt. to 8,768 cwt.; sodium compounds from 810,505 cwt. to 655,505 cwt. (the corresponding values being £365,401 and £303,923). On the other hand, some marked increases in exports are shown. Ammonium sulphate exports rose from 23,558 tons to 37,184 tons (or £242,342 to £385,667): analysis of this total shows that the increase is due to greater exports

to Spain and the Canaries, Japan, and "other countries," while the Dutch East Indies suddenly reduced their demand from 3,966 cwt. to 891 tons. It may be noted that the value of ammonium sulphate exported during March, 1929, was nearly one-sixth of the total value of all chemical exports, and the importance of this item is growing steadily.

In the coal tar products section, increases in exports are shown by benzol and toluol (from 5,100 gallons in March 1928 to 22,250 gallons in March 1929), naphthalene (2,173 cwt. to 9,889 cwt.), and especially tar oil, creosote oil, etc. (2,476,914 gallons to 4,496,147 gallons). Dyestuffs exports, though comparatively small, show a steady increase, the value having risen from £80,724 to £92,384. Actually the whole increase is due to exports of coal tar dyes having risen from 9,966 cwt. to 14,557 cwt. (£71,092 to £85,354). Exports of painters' colours and materials for once show a slight decrease (£338,737 to £323,066).

Coal Research Terminology

ONE of the conclusions of the last Power Conference in London was in favour of the standardisation of terms and other conditions for international usage, so as to avoid confusion and facilitate discussion and exchange of information. In the matter of coal research terminology an interesting attempt has been made to clarify the meaning of various terms used in studying the constitution of coal by representatives of the United States Bureau of Mines, Department of Commerce, and the British Safety in Mines Research Board, in connection with the co-operative work that is being done by the two organisations with the object of finding methods of preventing or lessening accidents in coal mines. In Technical Paper 446, "Terminology in Coal Research," published by the Bureau of Mines, the authors, Messrs. Reinhardt Thiessen and Wilfred Francis, have given particular attention to the terms "vitrain," "clarain," "durain," and "fusain," recently coined in England, and to the terms, "anthraxylon" and "attritus," evolved in America.

The conclusion is drawn that the English term "vitrain" has the same significance as the American term "anthraxylon." These terms apply to those portions of coals of bituminous rank which are made up of brilliant bands with conchoidal fractures. These bright bands consist of woody portions of trees which were turned into coal during the accumulation of vegetable matter in the woody swamps of the earlier coal-forming ages of the earth. The word "anthraxylon" is from the Greek anthrax (coal) and xylon (wood). The English term "clarain" is considered to have the same general meaning as the American term "attritus." These terms are used to describe those portions of coal consisting of dull bands which had their origin in a miscellaneous assortment of vegetable debris such as small splinters of wood, cellular structures, spores and pollen grains, cuticles and bark. The thin, bright streaks in "clarain" are bright streaks of "vitrain" (anthraxylon) which cannot be readily separated from the duller portions. Inherently laminated, it breaks sharply with a small surface at the break. The English term "durain" refers to a dull-band granular coal which is not common in America. The English term "fusain" is applied to what has been called "mineral charcoal" or "mother of coal" in America. This dark, fibrous, and powdery component is present universally in coal in small quantities. The terms "anthraxylon," "attritus," and "fusain" may be used irrespective of the rank or geological age of the coal. The terms "vitrain," "clarain," and "durain" should be used only for coals of bituminous rank.

The older German terms "Glanzkohle" and "Mattkohle," have been used in various ways by different authors. "Glanzkohle" may have been used for what is now termed "vitrain," for "clarain," or for both. "Mattkohle" is probably more nearly related to "durain," although it may also have been used for the darker portions of "clarain." It is thought that this report may assist those who study coals, whether from a mine-accident standpoint or from a fuel standpoint, in comparing and understanding the literature of the several countries on the subject of the constitution of coals. Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C., for 10 cents each.

Books Received

THE NATIONAL PHYSICAL LABORATORY REPORT FOR THE YEAR 1928. London: H.M. Stationey Office. Pp. 284. 9s.

ORGANIC SYNTHESES. Edited by James B. Conant. London: Chapman and Hall, Ltd. Pp. 108. 8s. 6d.

The Calendar

Apl. 29	Society of Dyers and Colourists (Manchester Section): Annual Meeting. "Colour and Constitution from the Standpoint of recent Electronic Theory." H. H. Hodgson. 7 p.m.	36, George Street, Manchester.
May 1	Society of Public Analysts. 8 p.m.	Burlington House, London.
2	Chemical Society. 8 p.m.	Burlington House, London.
2	Society of Chemical Industry (Nottingham Section): Visit to Stanton Ironworks. 2.15 p.m.	Nottingham.
6	Society of Chemical Industry (London Section): Annual Meeting. "Recent Advances in Low Temperature Preservation of Foodstuffs." Dr. T. Moran.	Burlington House, London.
7	Institute of Metals: "Some Ideas About Metals." Sir Oliver Lodge.	London.
9	Oil and Colour Chemists' Association: "Painting as it Affects the Railways." F. Fancutt. 7.30 p.m.	30, Russell Square, London.
9	Optical Society. 7.30 p.m.	Imperial College of Science, London.
14	Institution of Petroleum Technologists. 5.30 p.m.	John Street, Adelphi, London.
15	Royal Society of Arts: "The Reform of the British Patent System." Robert Burrell. 8 p.m.	John Street, Adelphi, London.
15	Society of Glass Technology: Annual Dinner.	London.
16	Chemical Society. 8 p.m.	Burlington House, London.
17	Institute of Chemistry (Belfast Section): Annual General Meeting.	Belfast.
19	Society of Dyers and Colourists (Manchester Section): Annual Meeting. 7 p.m.	36, George Street, Manchester.
23	Faraday Society: Annual General Meeting. 7.45 p.m.	Burlington House, London.

Development of British Chemical Industries

Fertilisers, Drugs, and Rayon

A LARGELY attended public meeting under the auspices of the British Science Guild was held at the Mansion House, London, on Wednesday afternoon, for the purpose of listening to addresses on the development of British chemical manufactures.

Some Realised Scientific Prophecies

The chair was occupied by Lord MELCHETT (president of the Guild), who, in the course of his opening remarks, said that in regard to the problem of the fixation of nitrogen, the importance of that had been manifest for half a century. He quoted from his father's (Dr. Ludwig Mond's) inaugural paper before the Chemical Society in 1881 :

"Through the classical researches of Lawes and Gilbert—who proved in opposition to no less an authority than Liebig, that ammonia is a most valuable manure, which enables us not only to maintain but to multiply the yield of our fields, and thus to feed on the same area a much larger proportion of the inhabitants—the immense importance of an abundant supply of ammonia, more particularly for the Old World, with its teeming populations and worn out soil has been apparent to everyone."

For many years Europe had paid to South America millions upon millions of pounds for ammonia in the shape of guano, and more recently, since the supply of guano practically ceased, for nitrate of soda, which effectively serves the same purpose as ammonia. During the past year South America exported 750,000 tons of nitrate, of which 650,000 went to Europe, representing the value of not less than £6,500,000. The problem of saving this immense expenditure to Europe, of making ourselves independent of a country so far away for the supply of a material upon which the prosperity of our agriculture (our most important industry) depends, by supplying this ammonia from sources at our own command, is certainly one of the most important which our science has to solve.

The problem stated in the quotation, said Lord Melchett, had now been solved. A great British industry had arisen—the manufacture of ammonia at Billingham by Synthetic Ammonia and Nitrates, Ltd., a subsidiary of I.C.I. There had been a rapid growth of the industry in the last few years. The production in 1928 was eight times that of 1924, four times that of 1927, and exceeded ¼ of a million tons. It was hoped that at the end of 1929 ¾ million tons would have been reached by sulphate of ammonia. That was a great triumph for British science and British industry, and an achievement for British engineering talent. Fertilisers from the air were cheaper to-day than before the war.

Artificial Silk

Speaking of artificial silk (Rayon), his Lordship said that that was another industry of which Britain might claim to be proud as pioneer. The idea of artificial silk was not new. Hooke, an early and famous Fellow of the Royal Society, referred in the latter half of the seventeenth century to the matter. He said :

"And I have often thought that probably there might be a way found out to make an artificial glutinous composition which resembles, if not fully as good, nay better than, that excrement, or whatever the substance be, out of which the silkworm draws his clew. If such composition were found it were certainly an easy matter to find a very quick way of drawing it out into small wires for use. I need not mention the use of such an invention, nor the benefit that is likely to accrue to the finder ; they being sufficiently obvious. This, therefore, may, I hope, give some ingenious and inquisitive person an occasion to make some trial."

Continuing, Lord Melchett considered that Rayon had made a great contribution towards the return of national prosperity, while it also brightened life.

Speaking of synthetic drugs, he said it was not difficult to imagine a future in which many of the very complicated compounds such as hormones would have their constituents accurately known. The chemical trade had always been a good barometer of the trade health of the country, as chemical products found their way into nearly every conceivable manufactured article.

Fertilisers from the Air

SIR FREDERICK KEEBLE, dealing with "Fertilisers from the Air," said that the natural processes for the fixation of nitrogen were too slow for the modern world and in the factories at Billingham in this country and in those of Germany, France and elsewhere, nitrogen of the air was now being made into fertilisers at the rate of over one million tons per year. Although industrially this was a vast quantity, looked at cosmically it was a mere bagatelle ; for the stores of nitrogen in the atmosphere were so vast and were being so continually replenished that at this rate of usage Billingham and all other factories could go on doing their best for 4,000 million years without using up the supplies. Largely in consequence of this rapid production of nitrogen the farmers of the world were acquiring the habit of using more nitrogenous and other fertilisers. Before the war, in 1913, farmers throughout the world used annually about ¾ of a million tons of nitrogen in all its various forms. In 1928, the total agricultural consumption amounted to nearly 1½ million tons of nitrogen. Different nations of the world were acquiring the nitrogen habit at different rates. Holland led the way, followed closely by Belgium. Germany came next, employing about one-third of the amount per acre used by Holland. The fourth place in the intensive use of nitrogen was occupied by Japan, applying per acre about ¼ of the amount used by Holland. Egypt came next, and then Great Britain, which used about little more than half what Germany applied to the acre. France lagged behind England, and interestingly enough the use of nitrogenous fertilisers in the United States was well below that of Western European countries. We had borrowed so much from the United States that it was pleasant to find that in the nitrogen habit there was something they might well borrow from us.

It was not surprising, having regard to the extension of manufacture of nitrogenous fertilisers, that the present price was low. Indeed, it might be said that the only thing which was cheap in the world to-day was nitrogenous fertiliser.

The great factory at Billingham, which was ensuring that this country should have an adequate share in this new industry, had, like the industry itself, developed at a great pace. Billingham began producing nitrogenous fertilisers in 1924, when its output (of sulphate of ammonia) was 50,000 tons. This was doubled in the following year, had increased five-fold by 1928, and was expected to reach a total of three-quarter million tons per annum by 1930. By that date the fertilisers manufactured there would not only contain nitrogen but other plant foods. The products of Billingham were not handed on to the farmers of the Empire until they had been tested thoroughly at the Agricultural Station of Imperial Chemical Industries at Jealott's Hill, near Maidenhead. When they had proved their worth, the fertilisers were distributed throughout the Empire by the several organisations associated with Imperial Chemical Industries ; thus this great industrial concern was lending powerful aid to the first and most essential of all industries—namely, agriculture.

Mr. A. B. Shearer, F.T.I. (of Courtaulds, Ltd.), then presented a paper on artificial silk, which we hope to reproduce in our next monthly dyestuffs supplement.

Synthetic Drugs

MR. FRANCIS H. CARR, in a paper on "Synthetic Drugs," reviewed the rise and development of therapeutic chemistry in this country, and shortly described the more remarkable modern products. He described these, he said, in order to show the way in which our knowledge of chemistry and of the chemical changes of the body was developing and enabling the manufacturer to supply what the physician required. Little by little and year by year new knowledge was unfolding the secrets of the living process, and already it could clearly be foreseen that the final development of this knowledge would make it possible to beautify, strengthen, and extend life by utilising the products of chemical synthesis.

There are many reasons, Mr. Carr proceeded, why the manufacture of these fine chemicals is to be regarded as an industry of exceptional importance to us in Great Brltain. It affords an outlet for the particular abilities of our race in scientific activity, and it makes for independence in applied science,

without which our nation and Empire cannot develop. During the period 1860 to 1880 Great Britain led the way in the manufacture of medicinal chemicals, but whereas in regard to heavy chemicals we have continued to lead, there came a period during the last twenty years of the nineteenth century when the lead in the manufacture of the newly introduced medicinal chemicals and dyes was not maintained, while new departures in these fields were continually being made in Germany. It was fortunate that English manufacturers had already set out to recover this lead before 1914, when through the necessities of war a great strain was thrown upon their productive capacity. Building upon the new developments which had already begun, they were able, largely with improvised processes and plant, to supply every requirement of wartime; but after the war period there remained the problem of substituting for this improvisation manufacturing methods which were fully efficient, in order that competition from foreign countries might be met. For a time it seemed that, owing to the higher rates of wages in this country compared with those in Germany, success in this would be impossible. But in the end the situation was met by the introduction of the Safeguarding of Industries Act, which has proved so instrumental that to-day we have recovered a great deal, if not yet all, of the ground which had been so disastrously lost. My own memory of the anxieties on account of supplies during the first years of war compels me to call attention to the strong need for always maintaining in the future a large measure of initiative and enterprise in this industry which was so nearly lost and which has been regained with such great difficulty.

Position in Great Britain

To-day in Great Britain there are important manufacturing firms which between them are making most of the synthetic drugs. There do remain, however, some drugs that are not yet manufactured, as, for example, guaiacol, phenacetin, and veronal, though I am told that a well-known company intends soon to make the first of these. These exceptions are chiefly substances derived from intermediates employed in the making of dyestuffs. The manufacturers of dyes and of synthetic drugs have this common ground of using the same intermediate compounds, which, being made on a larger scale by the dye manufacturers, are more cheaply produced by them. The fact that substances of the type that I have mentioned are not yet manufactured implies that the organisation of chemical industry in this country, although it has made rapid strides, has not yet been completed. The advantages of rationalisation in the fine chemical industry, by interconnecting and rearranging the various branches in order to secure efficiency and the best development, at once becomes apparent when it is realised that most of the substances manufactured require specialised plant and accumulated experience. At the same time, the market is easily overstocked, so that if much overlapping in manufacture occurs, plant becomes idle, skilled workers are not fully employed, and in consequence the cost per unit of production is not at the lowest possible level.

The changes which have occurred in chemical industry in late years are in large measure the result of the mutual approach and understanding which have already taken place between the business, the scientific and the practical men in the industry, through the medium of their Association. The more thoroughly this is carried into effect and continues in the future, the greater will be the rate of development. Future progress lies in extending the use of science in our industry, in the first place by promoting research in industrial laboratories in the closest possible relationship with that carried out in academic institutions and under the ægis of the Medical Research Council; and secondly, by finding employment for greater numbers of scientifically trained staffs and workers to whom is given responsibility and a living interest in the work they are performing.

At the close, Sir Richard Gregory proposed a vote of thanks to Lord Melchett for presiding, and to the other speakers. He said that it was only by the creation of new industries that Great Britain could regain in the world of commerce the position which she formerly occupied. In those chemical industries, with the development of electrical engineering, they had the promise of a great future.

A Bookman's Column

It is impossible, in the small space here available, to give an adequate idea of the contents of the *Colloid Symposium Monograph*, which consists of the papers presented at the Sixth Symposium on Colloid Chemistry, held at Toronto in 1928 (The Chemical Catalog Co., pp. 346, $6.50). The volume, of which Professor H. B. Weiser is the editor, contains 25 papers, ranging over every aspect of the subject. The first, entitled "Living Matter," was contributed by Sir W. B. Hardy, who was the guest of honour at the Symposium. The book is rounded off by author and subject indexes. It is hardly necessary to say that no library of colloid chemistry is complete without it.

* * *

Modern Paper-Making, by R. H. Clapperton and W. Henderson, with a foreword by Arthur Baker, has just been published by Ernest Benn, Ltd. (pp. 370, 31s. 6d.). This authoritative book, the work of two experienced paper-makers well known in the industry, deals with every process in the manufacture of paper by the most recent methods, and should be of interest to all makers, dealers, and users. Ernest Benn, Ltd., also publish *The Paper Mill Chemist*, by Henry P. Stevens (10s. 6d.), now in its third revised and enlarged edition; and *Modern Printing Inks*, a practical handbook for ink manufacturers and printers, by Alfred Seymour (6s.).

* * *

A trilingual chemical dictionary, in German, English and French, for scientific, technical and commercial use, has been compiled by A. W. Mayer, and Volume I, German-English-French, is now published by Otto Spamer, of Leipzig, under the title *Chemisches Fachwörterbuch* (pp. 826, Rm. 75). In each case there is given the German term, followed in order by the English and French equivalents, special explanations where these are required for clarity being given in German. Apparently, subsequent parallel volumes are planned in which English and French respectively will be the leading languages. The dictionary seems to be sound and thorough, and is excellently printed and produced. The price appears to be rather high.

* * *

Among the more unusual recent publications is *An Etymological Dictionary of Chemistry and Mineralogy*, by Dorothy and Kenneth C. Bailey (Edward Arnold and Co., pp. 308, 25s.). "The aim of this dictionary is primarily etymological. It provides the reader who is curious about such things with the derivation of the chemical and mineralogical names which have been current in the literature of these subjects at any period later than the middle of the nineteenth century." Most chemists *are* curious about such things at one time or another, and this dictionary will doubtless be the object of frequent reference. A mere glance at its contents is sufficient to reveal the energy and erudition which the authors have brought to their task.

* * *

Crosby Lockwood and Son have recently published a second revised edition of Vol. I of *Applied Chemistry: A Practical Handbook for Students of Household Science and Public Health*, by Dr. C. K. Tinkler and Helen Masters (pp. 296, 15s.). This primarily practical book is intended (together with the second volume, which deals with foods) to cover the applied chemistry part of the course leading to the Universtiy of London degree of B.Sc. in household and social science; but its use will certainly extend far beyond this purpose. The subjects dealt with are water analysis, water-softeners and soda-substitutes, soap, textile fibres, bleaching agents, dry-cleaning, air analysis, gaseous fuels, liquid and solid fuels, and materials used for the protection of wood, metal and other surfaces. Included under these headings are numerous special items of information which are not easily accessible in the ordinary way, as for example, notes on the removal of stains from textile fabrics; the removal of grease marks, tar, etc.; the causes of failure of the gas supply in a house; the examination of the efficiency of ventilation of rooms, etc. The harassed works chemist, faced with the usual infinite variety of strange problems, will find much assistance in this volume.

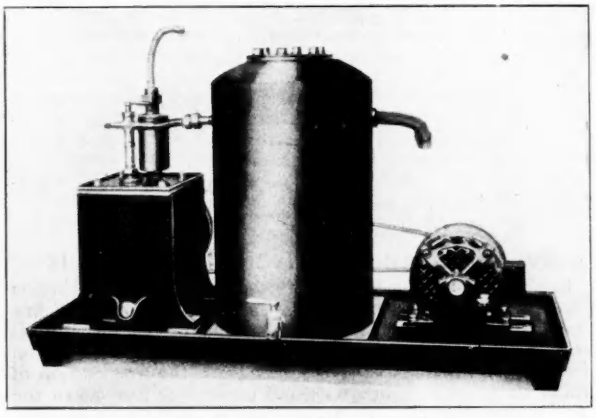
Laboratory Furnishing and Equipment

Notes on Some Interesting Products

From time to time, notes are given in these columns on interesting products of various kinds for use in works and laboratories. In what follows, an account is given of different varieties of furniture, apparatus, etc., required for the equipment of laboratories.

Laboratory Vacuum Pump Installations

THE great increase in the use of vacuum processes in modern chemical, pharmaceutical, physical and other work has necessitated the introduction into works practice of rotary vacuum pumps capable of producing vacua far higher than those obtainable with water and piston type pumps. A corresponding improvement in laboratory practice is therefore essential if progress is to be maintained. To meet this need,



SELF-CONTAINED EXHAUST UNIT.

W. Edwards and Co., of 8a, Allendale Road, Denmark Hill, London, S.E.5, have recently developed automatic vacuum pump installations for laboratory pipe lines. These vacuum service units consists of a type A pump (giving a vacuum of $\frac{1}{50}$ mm.); a mild-steel cylindrical reservoir for equalising the vacuum and absorbing water and acid vapours (the latter by means of lump caustic soda), and a driving motor. The unit is silent and compact, and may be housed in any convenient laboratory cupboard. Under average conditions, as many as 12 to 24 taps may be fitted to the pipe line allocated to one pump unit. For chemical laboratories the pipe lines are usually of pure lead, with all fittings welded or soldered.

Laboratory Furniture

Laboratory benches and kindred fittings are supplied by The Bennet Furnishing Co., Ltd., of 47, Glengall Road, Peckham, London (and also Glasgow and Belfast). Typical products are double working chemical benches, 12 ft. by $4\frac{1}{2}$ ft. by 2 ft. 10 in.; single working chemical benches, 12 ft. by 2 ft. 3 in. by 2 ft. 10 in.; demonstration tables, 8 ft. by 3 ft. by 3 ft.; single chemical working benches, 12 ft. by 2 ft. 3 in. by 2 ft. 10 in.; fume chambers; apparatus cupboards; sinks and drainers, etc. It is impossible to catalogue all equipment, and the company is prepared to provide a "lay-out" for laboratories on application. The company does its own plumbers', gas and water-fitters' work, as well as electrical equipment and wiring. The extraction of fumes and the supply of efficient fume chambers are specialities.

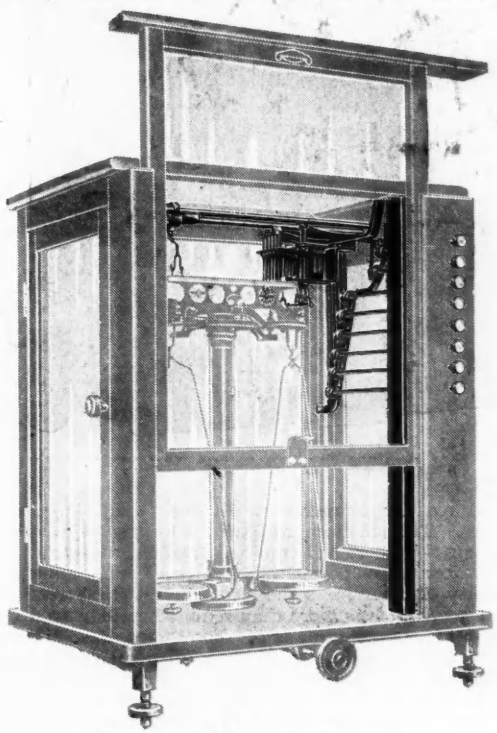
Quartz, Silica and Precious Metal Ware

Pure fused quartz or silica ware, under the name Vitreosil is supplied by Johnson, Matthey and Co., Ltd., of Hatton Garden, London, E.C.1. It is 99·8 per cent. SiO_2, and is acid proof and absolutely insoluble in water. It may generally be used as a substitute for platinum; will permanently endure temperatures up to 1,100° C., and higher temperatures for short periods; is one of the best insulators of electricity and at high temperatures is unequalled; and, last but not least, is made by British workmen in Britain by a British process. Vitreosil is manufactured in both translucent and transparent varieties. The former is suitable for ordinary laboratory and experimental purposes where transparency is unnecessary. The latter is not only transparent to visible light, enabling the progress of a reaction to be followed, but also transmits ultra-violet rays, and is thus invaluable in connection with radio-therapeutic, monochromatic and U.V. light apparatus. It can be supplied sufficiently bubble-free for lenses, prisms and other optical purposes. Vitreosil may be obtained in the form of tubing, plates, prisms, casseroles, combustion tubes, test tubes, rod, boats, dishes, crucibles, beakers, flasks, retorts, funnels, watch glasses, mercury condensation pumps, reagent and weighing bottles, etc.

Johnson, Matthey and Co. also supply apparatus made of precious metals, including platinum, iridio-platinum, rhodio-platinum, platinum-gold, silver, palladium-gold, gold-lined platinum, and nickel. The types of apparatus include crucibles, dishes, gauze, spatulas, filter cones, blowpipe nozzles, tongs, tweezers, triangles, boats, electrodes, sheet and wire, jets for use in the artificial silk industry, and so forth. The platinum supplies extend further to seamless tubes of any diameter, bottles, stills, and apparatus of all kinds. In addition, the firm are well known for the supply of salts of the precious metals.

A Quick-Weighing Balance

Frederick Jackson and Co., Ltd., of 44, Chapel Street, Salford, Manchester, have been supplying laboratory apparatus and pure chemicals since 1790. The balance illustrated, supplied by them, is of high accuracy, and a great time saver.



THE QUICK-WEIGHING BALANCE.

A set of riders is provided ranging from 0·01 to 0·5 g., which are operated by means of small knobs on the outside of the case. Weights below 1 g. are thereby dispensed with.

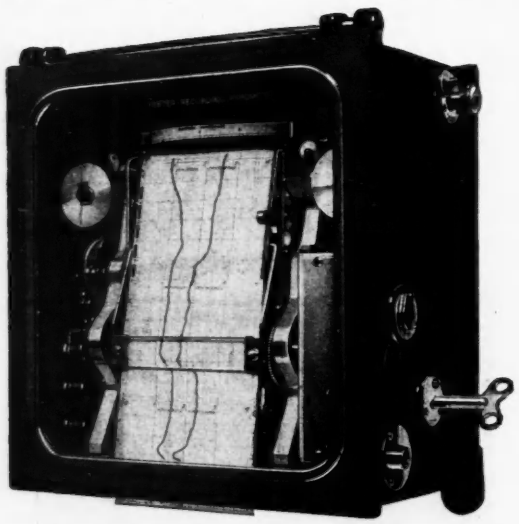
A Stainless Steel Autoclave

For over thirty years the firm of Chas. W. Cook and Sons, of University Works, Bath Grounds Estate, Ashby-de-la-Zouche, have been engaged in designing and manufacturing all kinds of research and commercial plant for work at high pressures and temperatures. The principal of the firm was originally with Sir James Dewar, F.R.S., in the days when the latter was investigating the liquefaction of air and hydrogen. One of the latest products of the firm is an electrically heated autoclave in stainless steel having a special type of water-jacketed stuffing box which makes possible the stirring of liquids at high temperatures and pressures. Autoclaves are also made in other suitable metals. Special mention may be made of apparatus such as the Bergius bomb for the production of oil from coal. The firm also manufactures the well-known Mahler-Cook bomb calorimeter.

Recording Pyrometers

Laboratory workers are often compelled to use instruments of great delicacy in order to get the sensitivity and accuracy demanded by the desired measurements, but it should not be imagined that they have any affection for unduly delicate instruments; therefore a pyrometer recorder possessing industrial robustness with laboratory accuracy will be of direct interest to those engaged in research work as well as to those controlling routine temperature measurements. The production of a direct deflection recorder of sensitivity sufficient for accurate pyrometry has always presented a difficult but fascinating problem.

The Foster "Strip" Recorder, manufactured by the Foster Instrument Co., of Letchworth, Herts, has several technical points of interest to all users of recording pyrometers. In the first place, it has the advantage of the continuous chart, one roll of which lasts for a month. The chart is printed in two



A Two-Record Strip Recorder.

colours, red for temperature divisions and blue for time divisions. This small improvement is of great convenience in examining the record at any time. The record is produced by a typewriter ribbon; and therefore there is no anxiety as to continuity of inking, and the record line is easily read to one part in 500, which is more than required in industrial service and ample for a large number of laboratory uses. By means of a multi-coloured ribbon, up to six distinguishable contemporaneous records are produced on one instrument.

In the figure, the Foster "Strip" Recorder is illustrated in the form of a two-record instrument. The change from one to the other is by means of an automatic commutator or switch, the mechanism at the same time changing the colour of the ribbon. The construction of such a switch is very important, for the forces can never be large enough to remove any surface corrosion on the switch contacts. On this recorder those contacts are, therefore, of pure platinum and pure gold, quite incorrodible. One other point is of importance and is sometimes ignored by pyrometer manufacturers, namely, that of magnetic shielding. The "Strip" Recorder has a case of thick cast iron, and is, in point of fact, magnetically shielded twice as well as is demanded by the British Engineering Standards Specification for electrical recorders.

Goggles, Helmets and Respirators

Safety goggles, helmets and respirators for protection in industry are supplied by H. G. Sommerfield, Ltd., of Charterhouse Chambers, Charterhouse Square, London. Goggles are obtainable in very large variety, for the protection of chemical workers, emery grinders, welders, etc. Each type is obtainable with varying kinds of glass lenses, for example: Super-armourplate, a white glass specially annealed to withstand hard blows; "Link" safety glass, recommended in cases where a three-ply glass is considered necessary; Pfund glass (gold plated and protected by a white cover glass), giving complete protection against harmful rays and remaining cool because of the reflection of the heat rays at a gold surface; Infrex (green), with the special property of absorption of heat rays without great reduction in illumination, recommended for use in furnace inspection and for all cases where protection against excessive heat is required.

Other products of the same company are respirators, sand-blast helmets, face masks, etc.

Research and Analytical Chemicals

Lopkin and Williams, Ltd., of 16–17, Cross Street, Hatton Garden, London, E.C.1, specialise in the manufacture of fine chemicals for analytical and research work. Analytical reagents are prepared to the specifications in their book, *Analytical Reagents: Standards and Tests*, the first edition of which was published in 1911; and experience has shown the necessity for the provision of reagents to such standards. They also prepare reagents to the A.R. specifications. This firm have been pioneers in the manufacture of fine chemicals since the middle of last century, and before the war were already producing between two and three thousand substances of this description. Since then this number has been largely increased, especially in the direction of the preparation of organic chemicals for research purposes. Among the chemicals used for manufacturing purposes, uranium salts used by the pottery manufacturers form an interesting group. Recently the firm has published a new comprehensive price list, which may be obtained on application.

Recording Gas Calorimeters

The efficient control of gas producers not only reduces the coal bill, but simplifies the organisation of all processes in which the gas is used. Efficient control is most conveniently achieved by a recording gas calorimeter, as it gives a record of times of stoking, etc., and by the fall of calorific value shows the presence of air holes through the fuel bed. By an analysis of published tests of many different gas producers, efficiency is found to increase with a rise of calorific value, the amount of steaming remaining constant. If, therefore, the desired ratio of steam to air supply is maintained constant, maximum efficiency is obtained when the calorific value is a maximum. The Sigma Instrument Co., Letchworth, Herts, whose recording gas calorimeters are extensively used by gas works throughout England, make a special recorder for producer gas, which has now been in use for several years on gas plants at home and abroad.

The Dielectrimeter

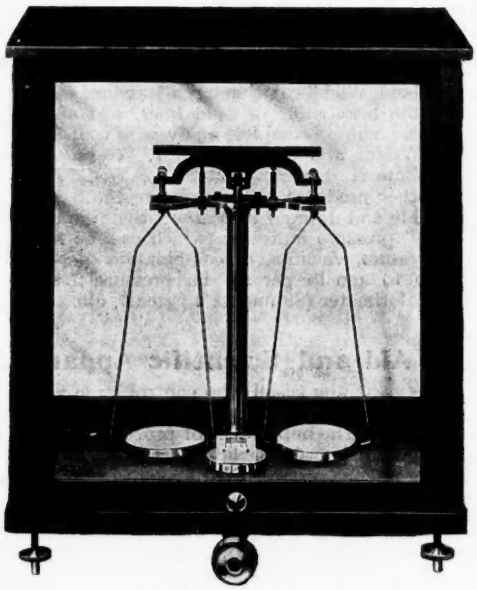
A simple portable instrument for testing the dielectric strength of insulating oils (*e.g.*, transformer and switch oils), known as the "Dielectrimeter," is being marketed by Walker, Crosweller and Co., of 54-58, Queen Elizabeth Street, London, S.E.1. The testing voltage is regulated by means of a variable spark gap with two spherical electrodes, one being fixed and the other movable. The movable electrode is mechanically connected to a pointer moving over a scale on the base of the instrument and immediately in front of the oil-testing

cell, this scale being calibrated to read up to 31,000 volts. The oil-testing cell has been specially designed for use with the Dielectrimeter. It is extremely convenient for cleaning and adjusting, the electrodes and their mountings being entirely independent of the glass oil container, which latter is therefore easily and cheaply renewed in the event of breakage.

The oil test cell (to hold which a well is provided in the base of the instrument) is coupled directly to the high tension terminals of the induction coil, and the voltage applied to the oil specimen is therefore dependent upon the position of the movable electrodes of the air gap. Concise instructions are supplied for the working of the Dielectrimeter, and these can be carried out by any careful person. A knowledge of electricity is not essential to the proper use of the instrument.

Balances, Scales and Weighing Machines

Events during the war and subsequently have finally shattered the illusion that all good balances are necessarily "made in Germany." Among British manufacturers may be mentioned William A. Webb, Ltd., of 4 and 5, Skinner



A "Webb" Balance.

Street, London, E.C.1, a firm which manufactures balances, scales, weighing machines, weights and weighing apparatus of all descriptions. The products include chemical balances, bullion balances, patent platform weighing machines, bankers' scales, etc.

Colorimeters and Nephelometers

Chemical analysis by means of the colorimeter and nephelometer is a most valuable microchemical method, in all cases where it is necessary to determine with the utmost rapidity and exactness the concentration of a substance which, for one reason or another, is not amenable to volumetric or gravimetric analysis. Since the colour intensity of a solution is proportional to the concentration of the colouring substance, the colorimeter provides a means of deriving from the intensity of the colour of a solution the amount of the coloured substance in that solution. Similarly, the nephelometer provides a method by which the degree of turbidity or cloudiness of a solution or sol is made to furnish a measure of the concentration of the disperse phase contained therein. The nephelometric method, whilst as yet a new optical mode of analysis awaiting further development, enables the bio-chemist more especially to determine minute quantities of phosphoric acid, calcium, magnesium, albumen, etc. The colorimetric method has attained great significance in metallurgical laboratories and steel works, where daily routine control tests must be carried out.

A number of types of colorimeters and nephelometers are supplied by Ernst Leitz, of 20, Mortimer Street, London, W.1, including universal colorimeters and nephelometers; universal colorimeters with nephelometer attachment; Duboscq colorimeters; and Bürker colorimeters (compensating colorimeters), designed on principles of complete optical symmetry, and available for use as hæmoglobinometers.

Electric Furnaces

Among the numerous scientific and technical requisites manufactured by A. Gallenkamp and Co., Ltd., of 19–21, Sun Street, Finsbury Square, London, E.C.2, are small electric furnaces for use in laboratories and works. Among the types of furnaces supplied are the following: Tube furnaces; two-

Tube Furnace.

and four-tube furnaces for carbon in steel determinations muffle furnaces; crucible furnaces; universal electric furnaces (combined crucible and muffle type), electric organic combustion furnaces; muffle furnaces for the determination of ash in coal; furnaces for the carbonisation assay of coal; vertical radiation tubular furnaces for the heat treatment of carbon steel and

Muffle Furnace.

general purposes. In addition, the firm supplies pyrometers. The tube and muffle type furnaces are illustrated. In general, the furnaces are for use up to 1,000° C. For higher temperatures, Silit furnaces (for use up to 1,400° C.) and carbon tube furnaces (for use up to 2,000° C.) are supplied.

Fine Chemical Products

A very wide range of chemicals for research, analysis and general purposes are manufactured by the British Drug Houses, Ltd., of Graham Street, City Road, London, N.1, and the company is continually adding to the list.

Notable among the products of the firm are the B.D.H. analytical reagents "A.R.," which are guaranteed to conform to the specifications published in the "B.D.H. Book of A.R. Standards." For some years B.D.H. have specialised in the

THE B.D.H. COMPARATOR CASE.

production of indicators and accessories for the determination of hydrogen in concentration, and the importance of pH work in many industries seems to be now universally recognised. The products for the determination of hydrogen ion concentration include: The B.D.H. Comparator Case, providing in a convenient form everything necessary for the rapid determination of hydrogen ion concentration; the B.D.H. Capillator, providing an improved method for the colorimetric determination of pH values by the use of capillary tubes instead of test tubes; the B.D.H. soil testing outfit, enabling farmers and others interested in agriculture and horticulture to determine the reaction of the soil with ease and rapidity; and numerous indicators, buffer solutions, etc.

Micrometer Gauge for Glass Tubing

An extremely rapid and useful micrometer gauge is sold by J. H. Towers and Co., Ltd., of Victoria House, Widnes. The dial is supplied either divided in tenths of a millimetre or fractions of an inch as required. The thickness of any material such as glass tubing, sheet metal, paper, etc., can be ascertained in a few seconds to within 1/20 mm. or 1/200 inch. This firm specialise in the manufacture of glass blown and graduated glassware, and can undertake very intricate work as well as repetition work. They also re-distil hydrochloric, nitric and sulphuric acids, and can guarantee them to be of the greatest purity.

MICROMETER GAUGE.

Gauges and Recording Thermometers

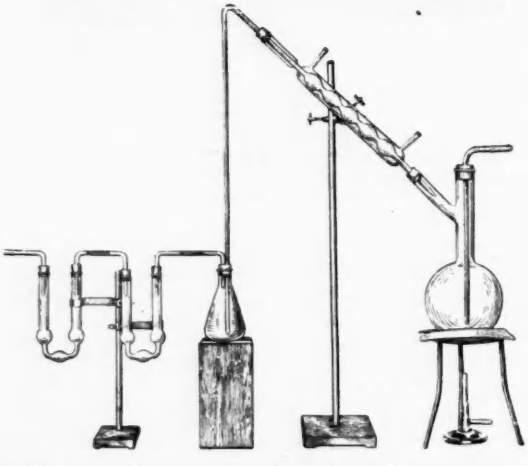
Among the products of the Accurate Recording Instrument Co., Ltd., of Teddington, are pressure and vacuum gauges, including vacuum gauges calibrated to 30 in. mercury, concentric pressure gauges, and compound pressure and vacuum gauges. A further important line consists of distance-recording and indicating thermometers. The "Tele-Thermograph" is an open-dial distance-recording thermometer; the "Tele-Thermeter" is a distance-indicating dial thermometer; while the "Tele-Thermo" is the corresponding direct-indicating dial type. The firm also supplies thermometers (mercury-in-glass type), pyrometers, etc.

Calorimeters, Indicators, and Recorders

The "Roland Wild" calorimeter, a standard apparatus for estimating the heat value of solid fuels, and also standard testing sets for making complete analyses of coal, are made by Alexander Wright and Co., Ltd., of 1, Westminster Palace Gardens, Victoria Street, London, S.W.1. Among the numerous other products of the firm are the S.A.W. patent carbon dioxide and draught indicator; the Simmance patent "dead-beat" pressure indicator (which can be had for any range of pressure, vacuum, or combination of pressure and vacuum, up to 400 lb. per sq. in. pressure); the positive record gas calorimeter (Simmance's patent), etc.

First Aid and Scientific Apparatus

While the great aim of all who control large works is the prevention of accidents, it is, of course, necessary to be prepared for them. The importance of proper provision of first-aid sets and material needs no emphasis, and the old-established firm of James Woolley, Sons and Co., Ltd., 76, Deansgate,



APPARATUS FOR DETERMINING AMOUNT OF SULPHUR DIOXIDE IN FOOD.

Manchester, is well known for supplies of this kind, complying with all the requirements of the law. The firm also supplies chemical and scientific apparatus of all kinds. It is impossible, from considerations of space, to deal with all the apparatus available, but attention may be drawn, as an example, to the apparatus for determining sulphur dioxide in food (illustrated herewith), as required by the regulations re preservatives in foodstuffs and as recommended by the

Ministry of Health (see Ministry of Health Report No. 43, July, 1927). This consists of a special distillation flask (1,500 c.c. capacity), a 12 in. Allihn's condenser, a 200 c.c. conical flask, two Wholer's U-tubes, a tripod stand, a Bunsen burner, a wood block, and the necessary connecting tubes and india-rubber stoppers.

Safety Appliances

Wallach Bros., Ltd., 49, Tabernacle Street, Finsbury Square, London, E.C.2, specialise in the manufacture of all kinds of safety appliances for all kinds of chemical and industrial work. Their catalogue enumerates a very comprehensive list of requisites, including, among numerous others, acid-proof suits, fire buckets, eye protectors, gas and other masks, fire escapes, fireproof paint, first aid cases, respirators, gloves, gauntlets, goggles, helmets, saw guards, stretchers, wire goggles and masks, etc. As an example of the thorough methods of the firm, attention may be drawn to their special catalogue of gas masks. A list is given of the most important poisons and irritant gases occurring in industry, and of the special gas masks and canisters giving protection against them. The value to chemists of such a catalogue need not be emphasised.

Filter Papers

Evans, Adlard and Co., Ltd., Postlip Mills, Winchcombe, Cheltenham, have manufactured filtering papers for over half a century. Owing to the exceptionally pure water supply obtained from the Cotswold Hills the ash residues are unusually low. Grades of every description are made in circles and sheets for laboratories, and in rolls and large sheets for industrial purposes. A large stock is always available.

Recovery of Dust and Fume

Methods Used in Metallurgical and Other Works

In a paper on "The Dry Recovery of Dust and Fume from Metallurgical and Other Processes," delivered before the Junior Institution of Engineers, on April 11, Mr. B. V. Lambert gave the following reasons for the growing attention which is being given to dust recovery in various branches of the engineering industry: (1) The dust might be of value; (2) It might be obnoxious if allowed to settle in the neighbourhood of the plant; (3) It might be an undesirable constituent of a gaseous product; (4) It might constitute an explosion or fire hazard; and (5) lastly, but in many respects the most important, it might be injurious to workers.

Valuable Dusts

The first reason was specially exemplified in non-ferrous pyrometallurgical processes where the effluent gases might contain fine particles of the original charge, together with vapours and volatile compounds of the metals under treatment; for example, fumes from copper, tin, silver, arsenic and mercury furnaces contain suspended matter, the value of which far outweighs the cost of recovery. In such processes as the grinding of flour, coal, cement, pigment material, the production of carbon or lampblack, etc., the resulting dust was the sole object of the processes, and its efficient and economical collection all-important. The second reason for recovery had reference to obnoxious fumes which might seriously damage vegetation or property, and the flue gases from boiler plants and cement kilns, which might be a serious nuisance.

Under the third category came coal gas and blast furnace gases which contained tar vapours, or dusts which were detrimental to the plant using them. The fourth reason had special reference to the liability of finely-divided matter of many kinds to form explosive mixtures with air, while its capacity for becoming statically electrified to a dangerous extent might give rise to serious explosions. The fifth reason was too well known to need detailed explanation.

Methods of Collection

The methods of dust collection or elimination varied in accordance with the nature, size and other qualities of the substance to be dealt with. Speaking generally, apparatus employing centrifugal action, such as cyclonic separators and centrifuges, and settling chambers and friction plates were most useful when the particles of dust were relatively coarse, but with regard to settling chambers, they should, in general, only be used as part of a multi-stage recovery process and where it was desired to cool down hot gases preparatory to further treatment.

While these methods could account for a large proportion by weight of the dust, etc., they dealt with, there were smaller particles of the coarser dusts which would escape collection, and they would be of little value where the particles formed clouds, *i.e.*, those whose diameter ranged from 10^{-3} to 10^{-5} cm., and practically useless in dealing with smokes whose particles ranged from 10^{-5} to 10^{-7} cm. in diameter. For those very fine particles some form of bag filter, or recovery by electrostatic precipitation, was essential.

Filtration of Gases

The filtration of gases was usually achieved by passing them through long narrow bags composed of cotton, wool and other like substances in such a way that the uncleaned gas passed into the bag, the dust being retained on the inside walls and the cleaned gas issuing through the pores of the fabric; mechanical shaking or the action of grids travelling up and down the bags precipitated the contents to the bottom of the bags, whence the dust fell into hoppers or trays and was periodically removed.

It was important that the right fabric be used, having regard to the nature of the dust to be collected; the texture of the cotton fabric was, generally speaking, not so close as woollen fabric and the back pressure set up was, therefore, less; it was also cheaper than wool, but could not be used for gases with a temperature greater than 90° C., nor was it suitable where acid was likely to be present; wool fabric could withstand temperatures up to 120° C., and did not appear to be affected by weak acids. Other special heat-resisting fabrics could be used to deal with temperatures up to 180° C. with flash over periods up to 200° C. A well-designed system of bag filters could easily show an efficiency in dust collection of 99 per cent.

The electrostatic precipitator was based on the principle that if a suitable electrostatic field was instituted within a vessel containing smoke, the smoke particles were almost instantly deposited upon the walls of the vessel. Plants on this principle utilised a high potential, 50,000 to 60,000 volts, which was maintained between two electrodes, the discharge electrode being in the form of a straight wire, either hanging vertically within a metal cylinder or pipe, or between flat plates, on to which the dust was deposited, and from which it was removed by automatically or manually operated rapping gear. The gases to be cleaned were passed through the tube or between the flat plates suspended in a flue. The collection efficiency of this apparatus might approach that of a good bag filter, and was well adapted to the handling of gases at high temperatures and acid-forming gases, being, in fact, much used in the precipitation of sulphuric acid mist.

Phosphate in Canada, 1928

According to information received from the Mines Branch of the Dominion Department of Mines at Ottawa, the production of phosphate in Canada during 1928 was 436 tons, valued at $5,611, as compared with 151 tons, valued at $1,717 in 1927. Phosphate rock, valued at $44, was exported during the year, while imports, which are derived principally from the United States, totalled 10,181 tons, valued at $67,842, as compared with 17,485 tons, valued at $94,758 in 1927. Previous to 1927, practically all of the small production of phosphate in Canada for the last ten or fifteen years consisted of apatite recovered from old waste dumps or secured during mining operations for mica in the Ontario-Quebec mica-phosphate field. Most of the output was taken by the Electric Reduction Co., at Buckingham, Que., and is presumed to have gone into phosphorus. In 1926-27, the Consolidated Mining and Smelting Co. undertook an investigation of low-grade sedimentary phosphate beds in the Crow's Nest district, British Columbia, in order to determine whether the material could be concentrated to serve as raw material for the manufacture of superphosphate. A large number of claims were taken up, and a small amount of phosphate rock was mined near Crow's Nest, concentrated at Trail, and converted into triple superphosphate.

Second Annual Meeting of Imperial Chemical Industries

Speeches by Lord Melchett and Sir Harry McGowan

In our last issue we published some editorial notes on the second annual meeting of Imperial Chemical Industries, which was held just before THE CHEMICAL AGE *went to press. We give below the more important passages from the speeches of Lord Melchett (chairman) and Sir Harry McGowan (president and vice-chairman).*

Lord MELCHETT, in moving the adoption of the report and accounts, referred to the lamented death of Sir John Brunner, "a good friend and a valuable colleague," and Mr. Davidson, of Newcastle, long associated with the United Alkali Co., and then proceeded :—

Regarding the results of last year, which I think we must all admit are extremely satisfactory, I think it worth while to refer to the conditions under which those results were obtained. The general conditions of trade in the home markets last year were none too favourable. The year started badly. They improved as it went on ; but it was not what you would describe as a very brilliant year. Many industries in which your products are used were to a certain extent suffering from considerable depression. Developments which we were all expecting to take place in various industries, like artificial silk—a very large consumer of our chemicals—have to some extent slowed down, if they have not been actually arrested.

Far Eastern Markets

Throughout those markets in which we were specially interested on a large scale in the Far East, China was suffering, and has not yet ceased to suffer, from the disturbances of civil strife, which hamper that great country with its teeming population from becoming the greatest consumer of the commodities we have to offer. Japan has had an acute financial crisis, and the political unrest in India is helpful neither to industry nor to commerce. In these circumstances we have every reason to congratulate ourselves on the continuous progress of our affairs.

I am glad to think that we have entered after some years on what appears to be a widespread improvement of industry. In fact, were it not for the unfortunate disturbance of a General Election, I feel quite sure that we should show from now onwards continual improvement in the industrial conditions of England. (And your industry equally would show, following it, progressive improvement.)

Let me give you one illustration. We are very large manufacturers of explosives—a very big industry. Explosives, naturally, are a large part of the cost and enterprise of coal-mines. The depression in the colliery industry affects the consumption of explosives. Therefore, the improvement which is now taking place in the coal industry reflects itself on our output, and, consequently, upon our profits in that branch of the business.

The textile industry is a large consumer of alkalis for clothing and dyes. When it is brisk we do more business. When it is depressed, as unfortunately it has been—I am glad to think it is mending a little—we naturally suffer in our output. But, considering all the circumstances, we have every reason to be satisfied with the progress we are making.

[Referring to the Derating Act, Lord Melchett said that the estimated relief for the year 1929 would be approximately £50,000 and that the annual benefit would be about £200,000.]

Technical Progress

It would take me a very much longer time than I have at my disposal to-day to give you a picture of the vast network of technical development which is going on in the 75 factories which your company is operating here and abroad. But I can only assure you that with the sleepless vigilance and the very able guidance of the technical directors and staff of this company, with the assistance of an adequately equipped and highly scientifically trained research staff, there is no corner or nook of existing processes or future possibilities which is not being explored in order to maintain that leading position which I am glad to think we enjoy to-day in the chemical industry of the world. (Cheers.)

We are rapidly completing the works of Synthetic Ammonia Nitrates, Ltd., at Billingham, where we have created in a short number of years what is really not a works but a city of factories, under the energetic and able guidance and the creative mind of Colonel Pollitt, who initiated that great project. (Cheers.) We have there rendered England safe for ever, so far as explosives are concerned, from the horrible danger it ran in the last war, and the uncertainty that it would be able to continue its position in the field. We shall rapidly be producing there no less than 2,500 tons a day of ammonium sulphate and other fertilisers, in order to increase the yield of food in this country, throughout the Empire, and throughout the world. We have been expanding day by day our organic chemical manufactures.

We are erecting there one of the largest and, I venture to say, the cheapest electrical power plants which will exist in this country, which will be, I understand, unequalled by any of the super-power plants which are being put up, about which we hear so much, but none of which could supply us with current at the price at which we can make it for ourselves. We shall have spent an investment of something like £25,000,000 in those works. I can assure you from the long and closely detailed study which I and my colleagues have given, not once but many times, to this enterprise that your money there is invested at profitable rates far exceeding the amount which we are asking from you when we ask you for capital in order to complete the constructional programme.

Alkali

Let me say one word about our old horse, alkali, still one of the best horses in the stables of the I.C.I., an old war-horse, a good steady goer, and a certain money-maker. We have remodelled our largest works at Winnington, in Cheshire, during the last two years. Although I have known these works since I was a little boy, when I was down there last I scarcely knew what had happened, for the old familiar friends which I have always adored and loved so, the dear old great big steam engines and blowing engines and plant of that kind which were moved backwards and forwards and used to be my childhood's joy, have disappeared. Twenty-five engines have been replaced by one small and apparently insignificant electric blower, which, for a very small part of the capital and working cost, does the work which those great and impressive machines used to do. A modern chemical works is not as impressive as it used to be, but it is clean, apparently simple, and extremely scientific, requiring different capacities of both management and labour in order to make it operative.

Now what is the result ? We spent £850,000 in 1928. We have not finished our work, and all the results are not yet coming in. But I have just had one example taken. If you take the saving for one year in the average capital expenditure in that and the previous year, a figure of great interest can be obtained. On this basis you will find the saving in the alkali section in 1928 gave a return of approximately 22 per cent. on the average capital outlay in 1927 and 1928. To achieve this in an industry which has been established for 50 years is remarkable, particularly when you consider that the industry has always had a highly progressive and scientific management.

Research and Patents

In pursuance of our research programme, we hope to open in June our new agricultural research station and farm at Jealott's Hill, near Wokingham, which completes one more stage in our investigation of the scientific problems affecting agriculture. We shall study not merely the problems affecting this country, but also questions affecting the whole of Imperial, tropical, and other agriculture, which is our whole range. I have myself recently paid a visit to this farm, and to the new laboratory which is going up there, and I can assure you that it really is something of which we can be proud. I think it will be the most important agricultural research station in this country, and I hope one of the most important in the world. To show you some of the results of our research work, it may interest you to learn that we hold about 500 British patents, and that our British patent applications pending amount at the present time to 215. As we naturally patent only the more important improvements which we are making, that gives you some picture of the work which is being done.

Labour and Finance

A year ago we had 40,000 men and women in our company's offices and factories; to-day we have 53,000. As the result of our share investment scheme, 355,000 shares have been allotted during the past year, and the total number of shares held by our employees to-day is over 850,000. I am glad to say that our relations with our trade union friends continue to be of a close and cordial character.

The first elections for our 71 works councils has just been completed, and the interest displayed by our workers can be judged by the fact that there were only 56 unopposed returns out of a total of 287 wards, and the percentage of voting was 92·9.

You have before you in the report the result of the year's profits. There is an increase of £921,018 over those for the year 1927. The total earnings applicable to the ordinary shares amount to £3,682,809, and this represents 10·47 per cent. on the ordinary capital, or just over 2s. per £1 share. The earnings allocatable to the deferred shares amount to £610,884, and this represents practically 6 per cent. on the deferred capital, or 7d. per 10s. share. This profit has been arrived at as usual after meeting the cost of maintaining in the highest efficiency all our plant and buildings, and meeting also the additional cost of developing labour policy.

Central Obsolescence Fund

We have adopted a new policy in creating a central obsolescence fund. Those who are responsible to-day for the conduct of large manufacturing enterprises have always before them the shadow of the possibility of new processes and new ideas rendering plant obsolescent if not obsolete. We have established a central fund with the considerable credit of £3,000,000. We intend to strengthen that fund from time to time. It will be a mobile, strategical reserve which will be applicable to any part of our undertaking at any time, to enable us to write off and replace, where necessary, any plant and apparatus which we have. I was told the other day by one of the leading officials in the great General Motor Co. that they had spent something like £6,000,000 in remodelling part of the plant in order to produce new models. You will never realise the advantage of having large financial strength until you come up against any contingency.

In fact, unless the great industries in this country are prepared to adopt the self-denying ordinances which are now the habit of great corporations abroad, and content themselves with lower distribution of annual profits and a bigger building up of liquid financial resources, they will not be able to maintain their position in the markets of the world. The great German chemical combine, the I.G., in the last four years has not distributed more than 52 per cent. of its profits.

Our friends in America, the Allied Chemical Co., manufacturing the same kind of product as we do, maintain their distribution on a similar conservative basis. The Steel Trust of America and General Motors, and, I think, all the great corporations, maintain a low distribution of their earnings. Their shareholders do not judge the value of their shares in terms of yield. Much more wisely, they judge them in terms of earnings. The directors of their concerns are able to reinvest their funds for future development, and there is a good return on the money which remains in the business. I am perfectly certain that that is a sound and wise and good course. It will certainly be the policy of this company so long as I help it in any shape or form. The policy of my colleagues, with their world-wide experience, as we have all had—a lifelong experience of ups and downs of industry—is that they are not disposed to depart from that in order to earn a transient and temporary popularity in circles which take little if any interest in the future of the industry and whose main interest is in the quotations on the Stock Exchange. They will not jeopardise a huge industry, employing a multitude of people, on which depends very largely the prosperity of this country and the development of the Empire as a whole.

Dividends and Capital Expenditure

It is an interesting fact that a dividend of 8 per cent. on the ordinary and 1¾ per cent. on the deferred shares which we are paying is equivalent to 12·875 per cent. on the old ordinary shares of Brunner Mond and Co., as against 10½ per cent. paid by that company for the year 1925–1926, and equivalent to 12·875 per cent., as against 10 per cent. paid by Nobel Industries for the year 1925. That shows how very fair was the merger scheme which Sir Harry McGowan and I made. The yield is 12·29 per cent., as against 10 per cent. in the year 1925 in the case of the United Alkali Co. and 6·02 per cent. as against 2½ per cent. for 1925–1926 in the case of the British Dyestuffs Corporation.

It therefore means that the shareholders of the old merger companies who have come into Imperial Chemical Industries have had nearly 3 per cent. increase in the yield in the two years' working on the shares which they exchanged. Speaking as an old shareholder in Brunner Mond and Co., I do not think any of us who exchanged shares at that time have any reason to regret the bargain we then made.

In 1928 our expenditure on additions and alterations amounted to £8,000,000. This more than absorbed the £6,500,000 raised by the issue of new capital in the latter half of 1928. The greater part of the expenditure has been devoted to the extension of your plant at Billingham and your different alkali works and the development of the explosive works at Ardeer, the extension of the electrolytic plant, and the development of dyestuffs. At the end of 1928 nearly 60 per cent. of the £8,000,000 related to plant still in process of construction. So that at that date we had nearly £5,000,000 worth of capital which was not yet remunerative. We find, however, a very satisfactory return on capital when it comes to production. Our additional investments in that year amounted approximately to two and a half million pounds, which was met by realisation of marketable investments. Part of this development is taking place in Australia and in Canada. We are asking for what appears to be a large amount of money, but if you take the money we ask for in relation to the size and magnitude of our business it is by no means so alarming as it appears to the uninitiated mind. Our construction programme on fixed assets called at the beginning of this year for more than £13,000,000. The greater part of that sum will be expended at Billingham for the completion of our works there. The other sums will be required for the completion and development of our programme in other directions. [In dealing with the terms of the new issue, the Chairman stated that the company had 160,000 shareholders with an average holding of £300.]

Prospects for 1929 and Onwards

A further point of some interest is that to maintain the rate of dividend we are paying for 1928 would require in respect of the new capital of 1929 an additional distribution of £582,000. It is early yet to speak of the prospects of trade this year. As far as we have gone and can see, they will be better than last year, but on the results already known to us for the first quarter of the year I am entitled to say that the growth of profits in 1929 on the capital already in our possession will be amply sufficient to take care of the additional dividend required. (Cheers.)

That brings me to the end of what has been a somewhat lengthy explanation. I think I need only repeat, what I have said before, that one is very proud indeed to be chairman of this company. I think every one who is connected with it in any capacity has an equal right to be proud of it. (Cheers.) Two years ago we launched this barque for the first great merger of this size in this country. There were many who doubted, criticised, and hesitated. There were people who said that we had not the genius in this country for supervising and managing the affairs of large corporations such as exists in America and other countries, that the temperament of the British people did not enable them to work together in a team to make for success. Some people thought our capital was too high and too unwieldy.

We are confident that the step we took was not only wise as regards our industry, but that, acting as we intended to act, it was a precedent and an example to the other great industries of this country. We have been fully justified in our action. Our affairs show a progressive improvement. You have not by any means yet obtained the full value and benefits which come from our merger. It will take at least another two years for the process of rationalisation and concentration within our own framework to be carried through, but any one who is at the wheel, as I am day by day, surrounded by a most loyal band of co-workers on the board and in the staff and throughout the organisation, such as any man would ever be proud to boast of, supported as I am by the vast majority of the shareholders of this great company, in our great desire not merely to make profits, which, of course, is the acid test of success, but

also to maintain the great industry for which we are responsible in its leadership in all parts of the Empire, and all over the world—any one at the wheel must feel extremely hopeful as to its future.

Sir Harry McGowan's Speech

In the course of his speech in seconding the motion, the President (Sir Harry McGowan) said :—

As regards trading generally, our Overseas operations are showing gratifying progress. The various companies we have organised throughout the world are, without exception, justifying themselves. While giving opportunity of more intensive sales effort in all the company's products, they are adding materially to the company's turnover and profits.

This applies equally to the British Empire, which, as you are doubtless aware, is in the main catered for by our subsidiary or affiliated companies. I have recently returned from one of my frequent visits to America and Canada, and am especially gratified by the progress of the associated company, Canadian Industries, Ltd., whose very able and efficient president (Mr. A. B. Purvis) is with us to-day. That company has recently decided on the extension of its activities into the large aud promising field of heavy chemicals, fertilisers, etc. In this development the Canadian company will have the technical and commercial help not only of your company but also of the new companies which are partners with us in that undertaking. It therefore starts under very favourable conditions and should have no difficulty in producing results to our satisfaction.

Mr. Todhunter, one of our colleagues, has been in Australia and New Zealand for some months past, working on a scheme of affiliation or amalgamation between the various concerns interested there in heavy chemicals and fertilisers. From recent advices I am glad to say that it seems reasonable to suppose that he will succeed in bringing about a unity of interest which will lead to the security and betterment of our interests in that large and developing country.

Mr. Nicholson has recently visited India to study on the spot how best to further the business in that country. He has formulated plans and instituted action for the future which we all feel in time will result in stimulating increasing demands for our products there, particularly in agriculture, with its vast possibilities, and to ensure that we get our full share of the trade going.

You are aware of your company's interest in South Africa, managed there by African Explosives and Industries, Ltd., one-half of the capital of that company being held by Imperial Chemical Industries and one-half by De Beers Co. Mr. S. B. Joel, one of the directors of that company, has just returned from South Africa, and he is delighted with the progress of the company, its efficient management, and future prospects.

There is one development in our activities since the last general meeting to which I would refer in a few words. A few months ago we formed an amalgamation of the principal fertiliser companies in Scotland, Scottish Agricultural Industries, Ltd., in which your company has the control. That is the result of intensive study on our part to see how we could help agriculture. That investigation convinced us that, if the farmer was to be effectively helped, a co-ordinated effort was necessary—hence the amalgamation. We have great hopes of the company, and it is a truism that if we can stimulate agriculture we shall give a fillip to many other industries.

Corporations such as ours are frequently considered by the unthinking to have one object only, that of getting high prices without regard to anything but profit-earning. One has only to exercise a little common sense to see how fallacious this is, and how contrary to the company's interests such a policy would be. Most of our products are either raw material, or semi-manufactured commodities for use in the production of other marketable goods, alkali for soap, etc., dyes for textiles ; and truly it must be realised that it would not be policy for us, by any undue handicap on the prices of our goods, to prejudice the user of our intermediate products in his efforts to secure business. In point of fact we have pursued the contrary policy ; it has been our endeavour to help our customers in the study of the use of cheaper materials or supplies, and to place our expert knowledge at their disposal, to help them to reduce the cost to themselves of the materials they draw from us. We are frequently able to offer either cheaper substitutes or advice on the more efficient utilisation of the commodities already in use. We have pursued and are pursuing the policy of selling at economic rates, helping the buyer as far as we can, with due regard to our responsibility to you, our shareholders.

Efficiency in Economic Production

All the technical ability and research we have in our employ is incessantly directed to efficiency in economic production. Great strides have already been made in that direction, and there can be no challenge to my statement that the formation of Imperial Chemical Industries has led to reductions in selling prices, improvements in quality, and in the service we have been able to place at the disposal of our customers. A great share of this satisfactory state of things has to be ascribed to the loyal work and enthusiasm of the staff and workers, and I wish my concluding words to be a tribute to them and our cordial thanks for all they have done to help us. With such a wonderful organisation, with such a loyal and efficient staff of workers, we have no doubt as to the future of your great company.

The resolution was put to the meeting and carried unanimously.

The Directorate

The Earl of Birkenhead, Mr. J. H. Wadsworth, the Hon. Henry Mond, Mr. J. G. Nicholson, Sir Max Muspratt, and Lieutenant-Colonel G. P. Pollitt, the retiring directors, were re-elected.

Price, Waterhouse and Co. and Thomson McLintock and Co. were appointed auditors of the company for the year 1929.

The Chairman moved and Dr. G. C. Clayton, M.P., seconded the following resolution :—" That this meeting hereby sanctions the increase in the authorised capital of the company to £95,000,000 by the creation of 40,000,000 new shares of 10s. each." This resolution was put and carried unanimously.

A separate meeting of the holders of seven per cent. cumulative preference shares was then held to consider a resolution authorising the creation of £10,000,000 of seven per cent. cumulative preference shares to be issued at such time or times and in such blocks as the board may think expedient. The Chairman moved the resolution and it was seconded by Sir Harry McGowan and carried.

Interim Report of Low Temperature Carbonisation

In an interim report, the board of Low Temperature Carbonisation says that the demand for " Coalite " has been such that it has only been possible to execute a relatively small portion of orders received. The new works at Askern, which are owned by a subsidiary, Doncaster Coalite, will have a total capacity of nearly 4,000 tons per week. The parent company is to acquire the whole of the debentures covering the cost of the new plant at Askern, and also all the preference capital and 60 per cent. of the ordinary capital in Doncaster Coalite. In addition, a contract has been made for the supply of approximately 1,500,000 tons of best washed coal direct from the colliery to the retorts without transport charges of any description. The output of petrol, it is stated, has been doubled, and a new method of refining has been evolved enabling the final product to be sold water white, and with no objectionable odour. The increased output of crude coal oil has all been sold, but prices have declined. An option has been given for the rights to work the company's process in the U.S.A., and a development company, the Low Temperature Carbonisation Corporation, has been formed there.

The Glycerine Industry

At the annual general meeting of Lever Brothers, Ltd., at Port Sunlight, on Thursday, April 18, Mr. F. D. Cooper, the chairman, referred to the depressed price of glycerine. He indicated that various new avenues for the utilisation of glycerine were being explored. A type suitable as an anti-freeze for motor car radiators was being marketed, and one of the largest motor bus companies was among those who found this use of glycerine essential during the period of frost. The use of the substance in connection with home electric lighting sets, and in the drying of gas for lighting, was also being developed.

Indian Chemical Notes

[From Our Indian Correspondent.]

The annual report of the Indian Institute of Science, Bangalore, for the year 1927-28 gives an interesting account of the research work carried out in its laboratories. Wherever possible, the laboratory experiments are directed to the improvement of manufacturing processes, the utilisation of some natural product, or the removal of an obstacle to the economic application of a scientific principle.

In the field of chemistry, both organic and inorganic, the Institute has completed the atomic weight determinations of antimony from different sources, and no disparity was found between specimens from India and Burma. Further work has been carried out on the electrical conductivity of thin oil films. Work in connection with photo-chemical oxidation and the photo-electric properties of some complex mercury compounds is in progress. An investigation has also been started to ascertain the causes of deterioration undergone by dry cells in the tropics.

Investigations regarding the utilisation of oil-bearing seeds have revealed fresh information regarding some of the less well-known fatty acids, for example: lignoceric, arachidic, and isocrucic acids.

Indian Paints

The Indian Stores Department has issued a pamphlet on "Paints in India," with a view to giving directions for the development of paint industry in India. The main object is to standardise the qualities of paints and to bring home to prospective purchasers the necessity of clearness in the expression of their wants. It will be helpful to manufacturers, in that it will show them exactly what is wanted and enable them to quote on a comparative basis. Every section of the pamphlet is of importance. But perhaps the most important is section 5, where specifications are published to interest manufacturers in raising their standard of manufacture. If manufacture up to the specifications laid down is insisted upon by other purchasing agencies, the paint industry will benefit. Manufacturers of paints in the United Kingdom might well study this pamphlet.

Oil Hydrogenation

Oil Products and Butterin Co., Ltd., is a new company started by the Indo-Swiss Trading Co., Ltd., of Calcutta, to install a hydrogenation plant to solidify oils by the most up-to-date methods, and to supply India thereby with a cheap and pure vegetable fat rich in food values. Incidentally, soap and various other industries like printing ink, varnish and paint manufacturing will receive a great impetus as they depend on the supply of cheap by-products of the oil industry. The imports of vegetable ghee into India now amount to a total of Rs. 2 crores in value annually. The capital of the company is Rs. 5 lakhs, and there are expert men on its board.

A New Fertiliser

An American fertiliser going under the name of milorganite is being advertised in India. This substance is the result of a process of utilising the sewage disposal of cities for the benefit of agriculture. There is great need in India for organic nitrogenous fertilisers. It is stated that experience has proved that conditions for the preparation of milorganite are particularly favourable in India, owing to the possibility of using the sun's heat for drying purposes.

Manganese Prospects

The United Kingdom has considerable interest in the exports of manganese from India, of which she claims a large share. It is well known that last year there was a merger of the Central Provinces Manganese Co. with certain ferro-manganese makers in the United Kingdom, and the United Kingdom Ferro-Manganese Co. was formed, the object being the unification of interests between the ferro-makers and the Central Provinces Manganese Co. as manganese ore producers. It is understood that the results of this merger are becoming visible and that they are good.

Research on Lac

The Royal Commission on Indian Agriculture have, in their report, discussed the question of lac improvement as a cottage industry for the cultivator. In their opinion, the chief obstacles in the way of the development of this industry are the great fluctuations in prices, the excessive number of middlemen, the competition from the synthetic article, the absence of any standardised product, and the liability to loss from pests. The Commission advocate the strengthening of the Indian Lac Research Institute at Ranchi. There are already in progress a biological investigation of the food constituents of host trees at various ages, studies of the insolubles in lac and shellac, of the physical properties of shellac solutions, of the constituents of synthetic lacs, and new process shellacs.

Coal Tar Dyes in Bombay

Owing to the removal of the import duty on dyes, as from October 1, 1927, the imports of dyes obtained a good stimulus, and the value of imports into Bombay in 1927-28 increased from Rs. 142 lakhs to Rs. 183 lakhs. In alizarine dyes there was a decrease of over half a million lbs. in imports from Germany, which was counterbalanced by larger despatches from the United Kingdom. Imports of aniline dyes increased by about 3 million lbs. to 10·7 million lbs., and there were increased supplies from Germany, Italy, Switzerland and France. Imports from the United Kingdom, though they declined in quantity, rose slightly in value.

India's Possibilities

At the annual meeting of the Institution of Chemists (India), at Calcutta, Mr. N. Brodie, superintendent of the Government Test House, Alipore, gave a very interesting lecture on the possibilities of the development of the chemical industry in India. He started by saying that for many years considerable interest has been shown in this subject, and the Government of India had adopted a definite policy of encouraging such industries. The Provincial Governments had also moved in the matter. One consequence of the policy had been that increased purchases of articles manufactured in India were being made by Government departments, and it was evident that the prejudice formerly so common against Indian-made goods had largely decreased. Manufacturers had thus been encouraged to develop existing industries or to start new ones, and in several cases foreign industrial firms had started branch factories in India.

Soap, Oil, Paints

After mentioning that India imported annually soap worth about Rs. 130 lakhs, Mr. Brodie stated that he could not give any explanation why these imports were necessary. India was one of the world's great oil-producing countries, and from oils exported from India soap was very largely made in Europe. There did not seem any reason, therefore, why all the soap required in India should not be made in India from indigenous oils and fats. Another industry for which, in Mr. Brodie's opinion, there was scope in India, was the paint industry. In no country was it possible to obtain all the materials required for paint making, but India was situated much more advantageously than any European country. In fact, he saw no reason why India should not be an exporting rather than an importing country for paint.

Artificial Manures

It is gratifying to find that the sale of artificial manures in India is increasing rapidly, and this is specially so in the Madras Presidency and in the Province of Bihar and Orissa. This is due to the extensive propaganda carried on by Nitram, Ltd., and other firms, and also to the fact that these fertilisers have now become cheap and are within the reach of the ryot's purse. Sulphate of ammonia in combination with phosphate appears to be particularly promising, especially on crops like paddy and sugar cane. The Madras Government have issued a bulletin dealing with the manurial problem in general, and are actively co-operating with the selling firms in the matter.

New Sugar Company

A new company has been started in the Punjab, called the Punjab Sugar Corporation, Ltd., with a capital of Rs. 10 lakhs, for the manufacture of sugar on a large scale. The scheme has met with the approval of the Punjab Government, which has taken shares of the face value of Rs. 2 lakhs. The site for the factory, which is within a few miles of Delhi, has been chosen with the assistance of the Agricultural Department. The Directorate will include the Registrar of Co-operative Societies and the Deputy Director of Agriculture, Punjab. S.G.W.

Continental Dye Cartel

Important Developments

DEVELOPMENTS in the international chemical industries during recent years (writes the Frankfurt correspondent of the *Times*) are now leading to the establishment of a Continental Dye Cartel. In December, 1927, the German Dye Trust, the I.G. Farbenindustrie, entered into an agreement with the Committee of the Chemical Industries of France, representing two strong French competitors in the production of aniline dyes, the Etablissements Kuhlmann and the Société des Matières Colorantes, concerning, in the first instance, sales and quotas of production. Since then negotiations have been extended to the dye industry of Switzerland, consisting of the chemical company Sandoz and the company for chemical industries (Ciba) at Basel, which are united by a community of interests. The negotiations between these three groups are now approaching conclusion and are chiefly to affect the organisation of sales.

While details of the agreement are still lacking, it is reported that the agencies of the three concerns in foreign countries are to be united, and also that the regulation of prices is to be based on common principles. Independent production is to be maintained. The question of sales in the United States will intentionally be omitted. The importance of the agreement lies in the fact that it comprises the largest dyestuff works on the Continent. Their chief competitors remain the respective industries in England and the United States. Attempts to come to an understanding with England are stated to have failed before the first Franco-German agreement was reached, apparently on account of the dispersion of English production, but chiefly on account of the English producers refusing to give up their preferential position in the British Dominions and Colonies.

The I.G. In America

Some light is thrown on the present stage of relations between the German Dye Trust and America by a *communiqué* which the I.G. Farbenindustrie at Frankfurt has just published. It is announced that some members of the board of the German Dye Trust, who had been staying in the United States for several weeks, are on their return journey. Their discussions with the Standard Oil Co. of New Jersey were conducted with a view to effecting a closer co-operation of the two concerns on a broader basis. In August, 1927, the German Dye Trust and the Standard Oil Co. had agreed on common experiments being made for the production of synthetic petrol by brown coal distillation and refining. In the light of these experiments, considerable progress has been made in the course of recent negotiations, and a complete working programme set up, on the basis of which the new process could now be generally introduced. A few legal and other points which can only be cleared up in Germany remain to be settled before the signing of the definite contract. The German Dye Trust announcement does not give any particulars regarding the contemplated working programme and financial questions, nor is any mention made of the other subjects discussed in America, namely, nitrogen and artificial silk.

Exploitation of Volcanic Ash Deposits in Saskatchewan

EXPLOITATION of volcanic ash deposits on a large scale in the vicinity of Swift Current, Sasketchewan, is to follow the installation there of a large mill by the Van Kel Cleansers, Ltd. This company has been engaged in extensive research work, with the assistance of the Dominion and Provincial Governments and the University of Saskatchewan, for the past three years, during which time production has been on a limited scale. The new mill building has been completed, and machinery is being installed by the Kipp Kelly Co., Ltd., of Winnipeg. The new industry represents an interesting use of Saskatchewan's mineral resources, volcanic ash, or volcanic dust, or pumicite being an important abrasive, filler and purifier used in the manufacture of soaps and cleansers, polishers, as a woodfiller, in paints, and as a purifier for lard and tallow. The deposits are reported to be very large, and the company, in addition to supplying Canadian trade requirements in volcanic dust, will carry on the manufacture of cleansers, polishers, kalsomine, etc.

New British Standard Specifications

Synthetic Resin Varnish Paper Boards

THE British Engineering Standards Association has just issued a new specification, No. 316-1929, which applies to synthetic-resin varnish-paper boards and tubes for general electrical purposes (excluding tubes moulded after being rolled) and also a revision of B.S.S. No. 229, Flame-proof Enclosures for Electrical Apparatus. The provisions of B.S. Specification No. 316–1929 are confined to what is termed Grade II material, *i.e.*, synthetic-resin varnish-paper boards and tubes the principal characteristic of which is high electric strength at high temperature. This grade of material is suitable for use on high-voltage oil-immersed plant and on low-voltage apparatus in air. The specification does not at present apply to Grade I material, which is defined as including boards and tubes the principal characteristics of which are relatively low water-absorption, high resistivity, low dielectric losses at radio frequencies and good machining properties; this material is such as is required for use on apparatus where it is important that high insulation resistance shall be maintained under all conditions of humidity. The specification will be extended at a later date to cover Grade I materials, but further research work is necessary before an adequate specification for this grade can be drafted.

The specification lays down suitable working limits for the materials to which it applies. A series of appendices supplies detailed instruction for the carrying out of the necessary tests, and there are two appendices giving abridged schedules of tests recommended for application to boards and tubes intended for certain specific uses.

B.S.S. No. 229–1929, Flame-proof Enclosures for Electrical Apparatus, defines the performance required for a flame-proof enclosure, and the tests to be carried out to verify such performance.

Copies of the above Specifications (Nos. 229–1929 and 316–1929) may be obtained on application to the Publications Department, British Engineering Standards Association, 28, Victoria Street, London, S.W.1, price 2s. 2d. each post free.

Tar Distillation at Plymouth

CHAIRMEN and engineers of gas undertakings in Devon and Cornwall, at the invitation of the directors of the Plymouth and Stonehouse Gas Light and Coke Co., paid a visit of inspection on Friday, April 19, to the Tar Distillery Works at Cattedown, Plymouth. The process of manufacture was described by the manager of the distillery, Mr. F. Kilpatrick, who mentioned that 700 tons of road tars were produced weekly from the tar sent there for distillation by the various gas works in the two counties. As a central distillery they were dealing with all the gas tars produced in Devon and Cornwall, and converting them into road tars. They were also producing creosote, which was used in the preservation of timber (including all the railway sleepers required in the two counties), and the works were the central depot for mixing and producing the national benzol mixture supplied for motor purposes in the district. The visitors, after luncheon, discussed matters of common interest at a conference held at the offices of the Plymouth Gas Co.

Mixed Fertilisers in Germany

ENCOURAGED by the success attained by the I.G. in the production of mixed fertilisers, German potash producers contemplate a programme of production. The first potash concern to enter the mixed fertiliser business is the Wintershall concern. The Neustassfurt-Friedrichshall potash concern, which merged in 1928 with Rhenania-Kunheim, of Berlin, into the Kali-Chemie Aktiengesellschaft, is reported to contemplate production of a mixed potash-phosphoric acid fertiliser. Rhenania-Kunheim mentions phosphate fertilisers in its general production of heavy chemicals, and is at present producing "Rhenania" phosphate. It is not unlikely that the Salzdetfurt-Westeregeln-Aschersleben company, which is now in process of increasing its capital, may be interested in entering mixed fertiliser production, as might also the Krugershall Aktiengesellschaft, recently formed by a merger of the Burbach and Gumpel potash interests.

River Pollution

West Riding Rivers Board's Application

MR. F. G. HILL (Inspector of the Minister of Health) at Barnsley, on Tuesday, heard an application by the West Riding Rivers Board for consent to take legal proceedings against the Yorkshire Paper Mills, Ltd., for alleged pollution of the River Dearne by liquid discharge from the company's factory, the Dearne Paper Works. Mr. H. E. Atter appeared for the Board.

Mr. J. H. Garner (acting chief inspector to the Rivers Board) said that the waste waters from the mills polluted the river because of the organic matter and solids they contained. There were no special difficulties in the way of purifying this class of trade refuse. All that was required was adequately-arranged and properly-managed settling tanks.

Mr. D. P. McKenzie (for the company) submitted that the discharge from the works was not polluting liquid within the meaning of the Act. It was to a very great extent pure, clean water, carrying with it a small percentage of fibre and China Clay, and still smaller quantities of alumina and rosin size. The discharge was merely innocuous discoloration, which did not one iota of damage to anyone. The mill took water that was already polluted to a great extent by tar residuals and other things from works higher up the river. To this the paper company added an equal part of pure water, and the result was an effluent that returned to the river, apart from discoloration, rather less polluted than when it was taken out. The company were using the most practicable means to prevent pollution, for if they allowed the fibre and clay to get away in abnormal quantities they would be pouring money away. They were prepared at the moment to spend over £800 on recovery plant. Even if it was found that there was a case to answer, Mr. McKenzie asked that the company should be given further time so that a fair trial could be given to the new plant.

The inquiry was closed.

Chemical and Wood Industries, Ltd.

THE subscription list was opened on Tuesday for 725,000 ordinary shares of £1 each in Chemical and Wood Industries, Ltd. Among the directors are Lord Bledisloe (chairman), Sir James Calder (a director of the Distillers' Co.), and R. P. Duchemin. The technical adviser is Dr. W. R. Ormandy. The company has been formed to acquire a controlling interest (of over 77 per cent. of the share capital) in the Destilacija Drva D.D. (called in English "Wood Distillation Co."), to finance that concern, and by that means to develop and exploit its chemical works and timber concessions in Bosnia, Yugoslavia. The wood distillation works is the largest single installation of its kind in Europe. The concern, which was established in 1921, acquired a lease contract of plant, sawmills, railways, etc., originally installed by a subsidiary of the German wood distillation company, the Holzverkohlungs Industrie A.-G., but, under the direction of the First Croatian Savings Bank, the enterprise has been reconstructed and modernised, and the lease contract has been extended until 1971. The lease includes about 150 kilometres Government standard gauge railways, and brown coal mines are worked. Chemical and Wood Industries, Ltd., has a capital of £1,000,000 in ordinary shares of £1 each, of which 725,000 are now being issued for subscription at par, the vendor taking the balance in full satisfaction of the purchase price. By reason of its holding of priority shares, the Yugoslavian Government is interested in the success of the wood distillation company, and, in addition, the works will enjoy particular protection under preferential tariffs. The Yugoslavian company owns the Suida patents for the direct manufacture of acetic acid. Among impending developments is the establishment of an artificial silk factory.

New Coal Distillation Plant

THE NEW COAL DISTILLATION PLANT on the Woodall-Duckham process which is being installed at Bedwas Colliery, near Cardiff, is now in an advanced stage, representing the high temperature carbonisation process in its latest practice, and is expected to be in full production in the early autumn. Eventually it is anticipated that the yearly output will be 1,500,000 gallons of motor spirit and other oils, 140,000 tons of foundry coke, and 42,000 tons of domestic coke.

Benn v. Maxton

Practical Business or Socialist Theory

To those happy people who believe Socialism to be the hope of the world, to those on the other hand who dread Socialism like a pestilence and as confidently believe it to be destructive of the best human qualities, or to those again who, without any strong feeling either way, love to hear two accomplished exponents of opposite systems brilliantly score off each other, *The Case of Benn* v. *Maxton* (just published by Ernest Benn, Ltd., pp. 215, 5s. net), should prove one of the most fascinating books of the season. It is the more attractive because, unlike a great trial or a great Parliamentary debate, the duel between these practised debaters does not end in a verdict or a division; it just comes to a natural end without telling the reader dogmatically which is right. But before it ends it puts the reader through one of the most stimulating educational courses that could be conceived. Capitalism on the one side and Socialism on the other are shown up under all sorts of revealing spot lights; each is taken in hand in turn, dissected, turned inside out, condemned and praised, abused and idolised, destroyed and reconstructed, by two of the most brilliant hands at this sort of work. The result is that the reader, while excitedly watching the dialectical sport, is being educated as to the real meaning of the terms and the systems they stand for with surprising effect and comes away from the contest thoroughly versed in the subject.

The book came into being in this way. Sir Ernest Benn, the Individualist, and Mr. James Maxton, the Chairman of the Independent Labour Party, first debated in public at the London School of Economics. A second contest of the same kind was arranged by the Labour Party, and took place at the Palais de Danse, Brixton. These discussions were so popular that the British Broadcasting Corporation secured these two opponents for an hour's debate. The occasion of this debate, simultaneously broadcast from all B.B.C. stations, was the first time effect was given to the removal of the ban on controversial broadcast. Mr. Maxton and Sir Ernest Benn both felt, however, that a *viva voce* discussion, limited in time and scope, could be improved upon in correspondence. They therefore exchanged a number of letters in which they debated at greater length the opposing views of Capitalism and Socialism. This vivacious correspondence, in which both men combine the hardest of hitting with the best of good humour, is not designed to convert anybody, but will be welcome to all as being the first occasion upon which two opposing and equally authoritative points of view have been brought side by side within the compass of a single volume.

While the debates with which listeners-in are familiar are reproduced, the bulk of the volume consists of letters, six of either side, started by Sir Ernest Benn in the most engaging way on November 29, 1927, and concluded by Mr. Maxton on December 4, 1928. In the friendliest way they are at close grips from the first page to the last; the interest is tense and continuous. No reader will ever believe again, after reading these letters, that the days of good letter-writing are over. Something of the spirit of the book is conveyed in the closing paragraph of Mr. Maxton's last letter to Sir Ernest:—

"In conclusion, I agree most heartily that the purpose of our debate and agitation is to make sluggish minds active, to make the uninterested inquire, to make the unconscious conscious, and if your vicious stabs at me and my clumsy punches at you have achieved this end, the task, in itself a pleasure, will have served a purpose."

Meeting of Creditors

AT Bankruptcy Buildings, London, on April 18, a general meeting of the creditors was held of Sidney Herbert Travis, chemical merchant, who had traded in partnership with another as "S. H. Travis and Co.," at 33, Kings Road, St. Pancras, London, manufacturing chemists. The purpose of the meeting was to consider a proposal for the payment of a composition, under the terms of which out of a sum of £1,500 (guaranteed), preferential debts will be paid in full, and a composition of 5s. in the £ on all provable debts except those in respect of which creditors have agreed to a reduction of the amounts respectively due to them, on which a composition of 5s. in the £ will be paid on the reduced amounts. The composition was accepted by the majority of the creditors.

The Nitrate Sales Scheme

Sir Arthur Goldfinch's Views

SOME interesting notes on the centralised sales of Chilean nitrate, by Sir Arthur Goldfinch, appear in the current *Chilean Review*. The scheme, it appears, was too rapidly improvised in August and September last, but the experience gained is expected to be invaluable next year. The Nitrate Producers' Association, in the opinion of Sir Arthur, has attempted to impose a selling system of too rigid a character, and more elasticity and a greater allowance for the requirements of each individual country would render the scheme more useful. Apparently the revised system of selling has not achieved all that was hoped, but the frank admission of the defects that have been disclosed in the working of the scheme is an indication that those responsible for the new arrangements are alert to the situation, and are determined to take whatever steps are needed to improve the sales organisation. The recent emendation of the statutes of the Producers' Association, giving the directorate greater powers of rapid action, is a move in the right direction, and it is evidently intended to make such further alterations as are required to provide greater elasticity in the working of the scheme. The general manager of the Producers' Association is due in London this week, and the Chilean Minister of Finance and the Superintendent of Nitrate in Chile are also expected here shortly. The object of their visit, it is understood, is to make a comprehensive study of the world fertiliser position, with a view to devising arrangements which should enable nitrate producers to strengthen and extend their hold upon consuming markets.

Chemical Merchant's Affairs

ADJUDGED a bankrupt on June 22 last, Wilfrid Cecil Smith (described in the receiving order as Wilfred Smith), chemical merchant and agent, 37, Great Tower Street, London, applied to Mr. Registrar Mellor in the London Bankruptcy Court on Tuesday for his order of discharge. The Official Receiver, in reading his report on the application, said that the proofs of debt and probable claims together amounted to £5,097 and the assets, valued by the debtor at £5 odd, had realised 8s. 10d. No dividend could be paid. The Official Receiver opposed the application on the grounds that the debtor's assets were not of a value equal to 10s. in the pound, and that he had contributed to his bankruptcy by rash and hazardous speculation, and His Honour said that it would be enough to suspend the discharge for three months.

German Market for Ammonium Chloride

GERMANY exports roughly 40,000 metric tons of ammonium chloride annually, and imports scarcely 30 tons, some being returned stocks. Estimates of German production of ammonium chloride cannot be obtained because of the nitrogen syndicate's requirements respecting production of specific fertilisers. Ammonium chloride is attaining more prominence, owing to its recent use in ammonia-chalk and ammonia-chalk saltpetre, and is strongly advocated for fertiliser in place of the sulphate. German chlorine production is estimated at 110,000 tons. This raw material, together with the well-known developments of synthetic ammonia now produced at the rate of about 540,000 tons annually, indicate what may be expected in the German market for ammonium chloride as well as competition in other markets.

Methylcyclohexanol Methyladipate: Exemption Application

A REPRESENTATION has been made to the Board of Trade under Section 10 (5) of the Finance Act, 1926, regarding the exemption from Key Industries Duty of methylcyclohexanol methyladipate. The question of the renewal of the Safeguarding of Industries (Exemption) No. 6 Order, 1928, is also under consideration. The articles covered by this order are :—R. acetone; acetone (fermentation); acetone, synthetic; radium compounds. Any communication on these matters should be addressed to the Principal Assistant Secretary, Industries and Manufactures Department, Board of Trade, Great George Street, London, S.W.1, within one month from the date of this notice (April 24, 1929).

Chemical Notes from Westminster

Questions in the House

The Gallery, Westminster.

SIR A. STEEL MAITLAND informed Mr. Kelly (April 15) that the estimated number of insured workers in the chemical industry in Great Britain at July 23, 1928, was: Men 73,910, women 18,840, juveniles 7,000. The number recorded as unemployed at July 23, 1928, was: Men 4,937, women 792, juveniles 123; the corresponding figures at March 25, 1929, being 5,226, 647 and 126.

In answer to Captain Streatfeild (April 18), who asked whether there was evidence to show that illness or death had resulted from the use of preservatives in cream, the Minister of Health (Mr. Chamberlain) said that there was evidence that individuals had suffered from digestive disorders after taking boracised cream, and there were cases on record where a single dose of borax had caused death. But, apart from the general objection to the use of preservatives in food as tending to mask the effects of dirty methods of production, the case against borax was that it was a cumulative and insidious chemical substance, the continued ingestion of which could not fail to be injurious, in a greater or less degree, to the tissues of the body.

Mr. Chamberlain, in answer to questions from Captain Streatfeild and others in regard to the conditions of manufacture of synthetic cream, said that he had received no reports on the subject, but that the provisions of the Public Health Act, 1925, should be sufficient to ensure the observation of all necessary precautions. The duty of enforcing the regulations fell upon the local authorities.

Lieut.-Commander Kenworthy (April 18) having raised the question of international action through the League of Nations for the control of supplies and prices of radium, Mr. Chamberlain replied that it would be better to defer action of this kind until the British Government had set up its organisation for the purchase of radium for medical purposes.

Viscount Sandon (April 18) asked the Minister of Transport whether he would immediately refer the question of the complete elimination of sulphur fumes from the workings of electricity generating plants to some body for scientific investigation and research; and whether, in the meantime, he would insist on sites for such purposes being chosen with full regard to the public interest, especially in the case of Battersea, in view of the effect of such fumes on the fabric of the Houses of Parliament. Lieut.-Colonel Wilfrid Ashley (Minister of Transport) replied that in approving sites for power stations regard was, of course, had to the public interest. When consent was given to the erection of the Battersea power station, an obligation was placed upon the London Power Company to take the best-known precautions for the due consumption of smoke and for preventing, so far as reasonably practicable, the evolution of oxides of sulphur. He was assured by the Electricity Commissioners that in this modern power station effective steps could and would be taken to prevent the emission of grit and smoke. The company had been employing research chemists to work on the problem of the elimination of sulphur fumes, and stated that satisfactory results had already been obtained in laboratory experiments. In view, however, of the public interests involved, the Electricity Commissioners had asked the Government Chemist to examine these results and to keep in close touch with the progress of the company's investigation. He would give advice on the subject, acting in conjunction with the Department of Scientific and Industrial Research.

Mr. Locker-Lampson (April 18), for the Secretary for Foreign Affairs, informed Mr. W. Thorne that the proposal of the German Government to ratify the Geneva protocol prohibiting the use of poison gas in war was passed by the Reichstag on March 21, but so far as he was aware Germany had not yet ratified. The British Government had not ratified the protocol.

From Week to Week

THE USE OF ACETEX safety glass on public vehicles has been approved by Scotland Yard, and the works at Woking are now in full swing.

UNIVERSITY NEWS.—*Glasgow:* The degree of Ph.D. has been conferred on Mr. W. Johnston, for a thesis on "The Conditions of Formation of Certain Double Sulphates."

THE CHEMICAL SOCIETY of St. Andrews University will visit the works of Scottish Dyes, Ltd., on the occasion of their annual outing, which takes place next month.

TWO YOUTHS were admitted to the Stockton and Thornaby Hospital on Tuesday suffering from injuries received in an accident at the works of Synthetic Ammonia and Nitrates, Ltd., Billingham.

A FIRE which occurred on Monday at the refinery of the Mexico Oil and Grease Co., whose premises are situated on the banks of the River Usk at Newport, caused damage estimated at between £3,000 and £4,000.

SCOTTISH DYES, LTD., which was started at Carlisle by Mr. James Morton, is being gradually transferred to Grangemouth. The premises being vacated at Carlisle are to be occupied by branches of Morton's Sundour Fabrics, Ltd.

THE BEMBERG (JAPAN) Corporation has been established, with a capital of £1,000,000, by the Bemberg Artificial Silk Works of Germany in co-operation with the Nippon Chisso Hiryokabushiki Kaisha of Tokyo. A new works will be erected to produce Bemberg silk.

THE GUTBROD-HEYL-BERINGER German mineral colour combination is reported as erecting a hydrogen plant in Hungary, the Elektro-Chemische Industrie A.G. of Budapest, with a capital of 6,000,000 pengo. This plant is to adjoin a nitrogen works controlled by the State, and is designed to supply the latter with raw material.

RECENT WILLS INCLUDE: Mr. Thomas Farquharson, of the Rosario Nitrate Co., Ltd. (personal estate in Great Britain), £28,205.—Mr. Fredk. Maurice Dickson, of Haverthwaite, Lancs., delegate director for Imperial Chemical Industries, Ltd., of Elterwater Gunpowder Co., Ltd., Sedgwick Gunpowder Co., Ltd., and W. H. Wakefield and Co., Ltd., £119,929.

THE ELLIOTT CRESSON GOLD MEDAL of the Franklin Institute, Philadelphia, has been awarded to Sir James Irvine, F.R.S., for his work on carbohydrates (see THE CHEMICAL AGE, March 30, p. 317). The medal is to be presented on May 25, and will be accepted by Sir Esmé Howard, British Ambassador to the United States, on behalf of the recipient.

MR. H. M. HODGES and Mr. J. A. Currie have been elected to the board of the Graesser-Monsanto Chemical Works, Ltd. Mr. Hodges, who has been connected with the company for the last 12 years, will act as director of sales, and Mr. Currie, who until recently was associated with Synthetic Ammonia and Nitrates, Ltd., will join the executive, headed by Mr. J. F. Queeny. Both the two new directors are chemists.

SIR OLIVER LODGE, F.R.S., is to deliver the nineteenth annual May lecture before the Institute of Metals on Tuesday, May 7. The title of the lecture—"Some Ideas About Metals"—is sufficiently broad to enable Sir Oliver to give one of his characteristic and enlightening discourses. Cards of invitation to the lecture can be obtained by means of a stamped and addressed envelope sent to Mr. G. Shaw Scott, M.Sc., Secretary of The Institute of Metals, 36, Victoria Street, London, S.W.1.

THE HON. HENRY MOND, M.P., son of Lord Melchett, is at present confined to his house with a dislocated knee, the result of an accident at tennis. It is thought that at least six weeks must elapse before the knee is normal. On Tuesday, when Mr. Mond attended the conference between the general council of the Trades Union Congress and representatives of the employers, he had to be carried from his house to his car, and from the car to the meeting.

BORAX production in Chile in 1913 was 48,000 metric tons per annum. In the period 1923-1927 it averaged 35,000 metric tons, but in 1927 dropped to about 23,000 metric tons, with a tendency to decline further, as reflected by the quarterly export reports for the second half of 1928. In the quarter ending September 31, they were 3,166 metric tons and in the last quarter of the year they declined to 2,642 metric tons. This condition is attributed to the competition from the United States and the consequent drop in borax prices.

SUGAR BEET AND CROP DRIERS, LTD., have completed the purchase of the patent rights in the De Vecchis Drying Process, held by De Vecchis (Foreign and Colonial), Ltd. This step marks an important development in the efforts of the British beet-sugar industry to secure a reduction in factory costs during the term of the subsidy. Sugar Beet and Crop Driers already own the Oxford Drying Process and this transaction places under British control substantially the whole of the world rights in the only two modern processes for the drying of sugar beet which have been sufficiently advanced to arrest the attention of the beet-sugar industry on the Continent.

MR. A. J. V. UNDERWOOD is taking part in the development of the wood distillation works at Teslic, Jugoslavia, which are being taken over by a British company.

OPERATIONS for developing the Spanish potash deposits are, according to Spanish Press statements, proceeding satisfactorily, both at the Maria Teresa and Alberto shafts.

THE MOND STAFFORDSHIRE REFINING CO., LTD., announce that as from April 28, 1929, their address will be: Abbey House, Westminster, London, S.W.1 (entrance: 1, Tothill Street). Telephone Nos.: Victoria 7748 and 2154.

MEMBERS OF THE CERAMIC SOCIETY left for a visit to America this week. On May 9 Dr. J. W. Mellor, F.R.S., the general hon. secretary, and Mrs. Mellor will be the guests at a dinner given in their honour by the Faculty of Chemistry, University of Pittsburgh.

THE BOARD OF TRADE, on the nomination of the Association of British Chemical Manufacturers, have appointed Mr. J. Davidson Pratt, M.A., B.Sc., F.I.C., to be a member of the Dyestuffs Industry Development Committee in the place of the late Mr. W. H. Dawson.

FOLLOWING the second annual meeting of Imperial Chemical Industries on Thursday, April 18, a meeting of the Works Councils, attended by about 900 delegates, was held in the Refectory of Imperial Chemical House, London, in the afternoon. Lord Melchett addressed the councils on the activities of the company during the year, with special reference to labour matters.

THE SHAREHOLDERS of Samuel Barlow and Co., Ltd., bleachers and dyers, have approved the sale of the undertaking to the Bradford Dyers Association for £161,250. This sum will provide par value for the preference shares, and 35s. each for the ordinary shares. The issued capital is £75,000 in ordinary shares of £1, and £30,000 in 6 per cent. cumulative preference shares of £5 each.

THE OIL AND COLOUR CHEMISTS' ASSOCIATION will hold a special general meeting at the Institute of Chemistry, Russell Square, London, on Thursday, May 9, when additions and alterations to the rules, recommended by the council, will be discussed. The meeting will be followed by a lecture by Mr. F. Fancutt on "Painting as it Affects the Railways." The annual general meeting will be held on May 30.

THE DISARMAMENT COMMISSION of the League of Nations, on Tuesday, at a private sitting, adopted the following Belgian motion, completing the chapter of the draft convention relating to chemical warfare: "The High Contracting Parties abstain, on condition of reciprocity, from the use in war of asphyxiating, poisonous, or similar gases, as also from the use of all liquid matter or similar process. They interdict absolutely the use of all manner of bacteriological warfare."

THE ZINC MANUFACTURING CO., LTD., on Wednesday, made an issue of 1,275,000 "A" shares of 10s. each. The company has been formed with the object of acquiring the sole and exclusive right (subject to the right of Stewarts and Lloyds, Ltd., to manufacture 10,000 tons of spelter per annum) to manufacture zinc, zinc oxide, and other zinc products by the Coley process, and to sell the same throughout the British Isles, and throughout France, Spain, Portugal and their colonies and protectorates.

THE ANNUAL GENERAL MEETING of the Hull Chemical and Engineering Society was held on April 16, when the following officers were elected for the next session:—President, Mr. E. H. Hall; senior vice-president, Mr. J. H. Neave; junior vice-president and corresponding secretary, Mr. J. Pryce-Jones; secretary, Mr. H. N. Kay; minute secretary, Mr. H. L. Coulson; treasurer, Mr. H. Foster; committee (chemists), Messrs. Rodmell, Howard Thompson, Elvin, and Andrews (engineers), Messrs. Venables, Coonan, Upton, and Ringrose.

A DINNER IN HONOUR of Mr. Arthur Trobridge, who is retiring after 55 years in the chemical industry, was held on April 18, at the Oxford Galleries, Newcastle. Mr. Trobridge began his career in 1874 as a chemist in the laboratory of Chance Brothers and Co., of Oldbury, of which firm he became assistant manager, a position he held until 1900, when he entered business on his own account as a chemical manufacturer in Newcastle. He is a past chairman of the Newcastle Section of the Society of Chemical Industry, and has also held the posts of secretary and treasurer to the Newcastle Chemical Industry Club, having been one of the founders of this organisation.

METHANE IN COKE OVEN GAS may be (25 per cent.) electrically converted to acetylene, according to an announcement at a scientific meeting held recently at the Coal Research Institute of Mulheim. This constituent of coke oven gas still awaits better utilisation. Because of the high proportion of methane in coke oven gas, combined with the large production of the latter, methane apparently has a potential economic value which justifies extensive research. The principal uses of methane have been as a source of coke-oven heat in synthetic ammonia conversion plants, and as a heating gas for long distance conveyance, oxy-methane steel cutting, soldering, and welding, cracking into hydrogen and carbon dioxide, manufacture of carbon black, and as a starting point in producing motor fuel.

References to Current Literature

British

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The detection, determination and oxidation of sulphur dioxide. D. Henville. *Analyst*, April, pp. 228–231.

The potentiometric titration of ammonia. E. B. R. Prideaux. *J.S.C.I.*, April 19, pp. 87–88T.

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Investigations on the relations between the acidity and freezing point of milk. A. J. Parker and L. S. Spackman. *Analyst*, April, pp. 217–223.

GENERAL.—The disposal of ammonia liquors. D. W. Parkes. *J.S.C.I.*, April 19, pp. 81–86T.

United States

ANALYSIS.—A study of the determination of chlorides in bromides. R. K. McAlpine. *J. Amer. Chem. Soc.*, April, pp. 1,065–1,073. The bromide is converted to bromoacetone by the action of potassium permanganate and acetone. The chlorine is then determined as silver chloride.

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GENERAL.—Electrical conduction in textiles. III.—Anomalous properties of conduction in textiles. E. J. Murphy. *J. Phys. Chem.*, April, pp. 509–532.

Sulphuric acid and hydriodic acid. F. Bush. *J. Phys. Chem.*, April, pp. 613–620.

A method for determining vapour densities at room temperatures. E. F. Linhorst. *J. Amer. Chem. Soc.*, April, pp. 1,165–1,167.

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Pure carbon monoxide for experimental purposes. J. G. Thompson. *Ind. Eng. Chem.*, April 1, pp. 389–390.

LOW TEMPERATURE CARBONISATION.—Economics of low temperature coal treatment. W. A. Darrah. *Combustion*, April, pp. 179–185. A very complete discussion of costs and possibilities.

RUBBER.—Natural and synthetic rubber. I.—Products of the destructive distillation of natural rubber. T. Midgley, Jnr., and A. L. Henne. *J. Amer. Chem. Soc.*, April, pp. 1,215–1,226. II.—Reduction of isoprene by Na—NH_3 (sodium in liquid ammonia). *Ibid.*, pp. 1,293–1,294. III.—Dimethyloctadiene. *Ibid.*, pp. 1,294–1,296.

TECHNIQUE.—A critical consideration of some schemes of fractionation. A. A. Sunier. *J. Phys. Chem.*, April, pp. 577–585.

WAX.—Some characteristics of amorphous wax. L. D. Jones and F. E. Blachly. *Ind. Eng. Chem.*, April 1, pp. 318–320.

German

ANALYSIS.—The differentiation of pressed and extracted cocoa-butter. Dr. Aufrecht. *Chemiker-Zeitung*, April 20, p. 318.

APPARATUS.—A new method of measuring small pressures with distant reading. A. Simon and F. Feher. *Zeitschrift Elektrochem.*, April, pp. 162–165.

ELECTROMETRIC TITRATION.—The performance of conductimetric titrations and the measurement of the resistance of electrolytes by a visual method. G. Jander and O. Pfundt. *Zeitschrift Elektrochem.*, April, pp. 206–208.

GENERAL.—The action of anhydrous mono- and di-phosphates on Permutit : A contribution to the fixation of phosphoric acid by constituents of the soil. E. Berl and P. Schmittner. *Zeitschrift angewandte Chem.*, April 6, pp. 351–355.

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The action of chlorine on iron oxides. W. Kangro and R. Flügge. *Zeitschrift Elektrochem.*, April, pp. 189–194.

A reaction between pyrolusite and ammonium chloride. C. Drotschmann. *Zeitschrift Elektrochem.*, April, pp. 194–198.

The affinity of sulphur for the metals. C. Frick *Chemiker-Zeitung*, April 20, pp. 317–318.

ORGANIC.—A convenient method for the preparation of salts of methylguanidine stable in air. W. Traube and K. Gorniak. *Zeitschrift angewandte Chem.*, April 13, pp. 379–382.

Miscellaneous

ANALYSIS.—The determination of tin by rapid electrolysis. J. Sueda and R. Uzel. *Collection of Czechlovakian Chem. Communications*, April, pp. 203–222 (in English). Tin may be rapidly determined electrolytically in the stannous state from neutral oxalate solutions ; or in the stannous or stannic state from acid oxalate solutions in the presence of hydroxylamine (25 minutes). Tin may be determined very accurately from hydrochloric acid solutions, especially in the presence of hydroxylamine.

The quantitative determination of benzene and toluene in gases. F. Schulz. *Collection of Czechoslovakian Chem. Communications*, April, pp. 228–233 (in English). The hydrocarbons are brominated in the presence of anhydrous aluminium pentabromide, the hexabromobenzene and pentabromotoluene being weighed.

GENERAL.—The period of delay in auto-ignitions and explosions. M. Brunner. *Helvetica Chimica Acta*, Vol. XII, Part 2, pp. 295–304 (in German).

Oxidations with fluorine. XII.—The action of fluorine on nitric acid, perchloric acid and related compounds. F. Fichter and E. Brunner. *Helvetica Chimica Acta*, Vol. XII, Part 2, pp. 305–313 (in German).

Studies on dehydrated aluminium silicates. II.—The dehydration vapour pressure of kaolin. C. J. van Nieuwenburg and H. A. J. Pieters. *Recueil Travaux Chimiques Pays-Bas*, April 15, pp. 406–416 (in English). The dissociation pressure is a function of the water content over the whole range.

ORGANIC.—The action of acetylene on benzene in the presence of aluminium chloride. J. Böeseken and A. A. Adler. *Recueil Travaux Chimiques Pays-Bas*, April 15, pp. 474–485 (in French).

The condensation of ethylene with sulphuric acid in the presence of mercurous sulphate and copper sulphate. J. Böeseken and N. Max. *Recueil Travaux Chimiques Pays-Bas*, April 15, pp. 486–487 (in French).

The action of hydrazine on some unsaturated acids. J. Hanus and J. Vorisek. *Collection of Czechoslovakian Chem. Communications*, April, pp. 223–227 (in French).

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

308,229. Aldehyde Sulphoxylates, Production of. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, September 19, 1927.

Aldehyde sulphoxylates are usually obtained by reducing aldehyde bisulphites with metals, or by electrolytic reduction. In this invention, aldehyde or ketone sulphoxylates are obtained by reducing the corresponding aldehyde or ketone bisulphites or hydrosulphites by means of hydrogen or a gas containing it, at ordinary or increased pressure, with the aid of an activated or unactivated hydrogenation catalyst such as nickel, cobalt, or platinum. In the case of the reduction of formaldehyde bisulphite, the reduction is effected either with an activated hydrogenation catalyst, or at a pressure above 20 atmospheres. The reduction is preferably effected at a low temperature and at a hydrogen concentration about pH=7. Examples are given.

308,231. Substituted Benzoyl Halides, Production of. P. F. Bangham, J. Thomas and Scottish Dyes, Ltd., Earl's Road, Grangemouth, Stirling. Application date, November 18, 1927.

The process is principally for the production of chlorbenzoyl chlorides, which are obtained by the interaction of substituted benzo-trihalide with a correspondingly substituted benzoic acid by means of a metallic chloride such as zinc chloride, in the absence of a solvent. The substituted benzoic acid is obtained from the substituted benzo-trihalide by treating with boiling milk of lime. The substituted benzotrihalide is obtained by treating a substituted toluene with the theoretical amount of halogen. The benzoyl halide obtained is purified by fractional distillation under reduced pressure. A mixture of ortho- and para-chlor-benzoyl is obtained from a mixture of ortho- and para-chlor-benzotrichlorides, and a mixture of ortho- and para-chlor-benzoic acids. A number of examples are given.

308,285. Ketonic Alcohols, Production of. Nobel Industries, Ltd., Nobel House, Buckingham Gate, London, S.W.1. From E. I. Du Pont de Nemours and Co., Wilmington,, Del., U.S.A. Application date, October 21, 1927.

The process is for the production of ketonic alcohols of comparatively high boiling point by the polymerisation of low boiling aliphatic ketones in the presence of an alkaline polymerising agent, particularly diacetone alcohol by the polymerisation of acetone. The polymerising agent, *e.g.*, caustic potash, is employed in suspension in an inert liquid hydrocarbon which is not a solvent for the polymerising agent, but is miscible with the ketone, such as benzene, toluene, xylene, solvent naphtha, gasoline, and similar paraffin hydrocarbons. In a modified process, the alkaline polymerising agent is dispersed in the presence of an extender which is inert with respect to it, and to the aliphatic ketone, and the ketonic alcohol, such as Fuller's earth, slate, talc, soapstone, alumina, gypsum, asbestine, kieselguhr, clay, etc. The polymerisation is effected at as low a temperature as possible.

308,468. Methyl Alcohol, Production of. H. G. Smith and C. J. Bridger, Norton Hall, The Green, Norton-on-Tees, Durham, and Imperial Chemical Industries, Ltd., Broadway Buildings, Broadway, Westminster, London, S.W.1. Application date, March 19, 1928.

Ethyl alcohol is obtained from ethylene and water in the liquid phase under high pressure, and at a temperature of 200°-300° C. in the presence of an inorganic salt having an affinity for ethylene, such as silver nitrate, cuprous chloride, or mercuric chloride, dissolved or suspended in water. A conversion of 10 per cent. of the ethylene is obtained using saturated mercuric chloride, the autoclave employed being protected by a coating of "Vitreosil."

308,516. Alkaline Earth Titanates, Production of. E. C. R. Marks, London. From Titanium, Ltd., 20, St. Paul Street West, Montreal, Canada. Application date, May 29, 1928.

A paste of titanic acid is treated with a normal acetate such as zinc, sodium, or ammonium acetate, to react with the SO_4 present, and the sulphate formed is eliminated by washing. The residue is treated with barium carbonate to produce a compound having the formula $BaTiO_3$. A small proportion of hydrochloric acid is then added and the mixture is heated to 750°–880° C. in a furnace. The product is a pure white pigment which is slightly alkaline.

Note.—Abstracts of the following specifications, which are now accepted, appeared in The Chemical Age when they became open to inspection under the International Convention :—282,448 (Consortium für Elektro-Chemische Industrie Ges.) relating to butyl alcohol from ethyl alcohol, see Vol. XVIII, p. 183 ; 282,682-3 and 283,118 (I.G. Farbenindustrie Akt.-Ges.) relating to dyestuffs, see Vol. XVIII, pp. 204 and 225 ; 290,628 (Huttenwerke Trotha Akt.-Ges., and W. Witter) relating to recovery of tin, see Vol. XIX, p. 15 (Metallurgical Section) ; 291, 767 (Metallges Akt.-Ges.) relating to neutralising free fatty acids with glycerine, see Vol. XIX, p. 127 ; 295,315 (H. J. van Royen) relating to iron and steel insensitive to cold shortness, blue shortness and ageing, see Vol. XIX, p. 39 (Metallurgical Section).

International Specifications not yet Accepted

305,981. Destructive Hydrogenation. H. Terrisse, 26, Rue de Marignac, Geneva, and L. Dufour, Aigue Bieue, Versoix, Switzerland. International Convention date, February 13, 1928.

Gas oil, schist oil, brown coal tar, etc., are heated to 200°–500° C. at a pressure of 5–40 kilos. per sq. cm., in. the presence of ferrous chloride and gases such as hydrogen or water gas. The oil is desulphurised, and motor benzine is obtained. The product distils between 35°–270° C.

306,046. Alkali Nitrates. F. Jost, Castroperstrasse, Herne-Börnig, Germany. International Convention date, February 14, 1928.

Sodium chloride is treated with phosphoric acid to obtain sodium phosphate, which is then treated with calcium nitrate to obtain sodium nitrate and calcium phosphate. An excess of calcium nitrate may be used, and the product used as a fertiliser. The calcium phosphate may be treated with sulphuric acid to obtain the phosphoric acid required. The calcium sulphate may be treated with ammonia and carbon dioxide to obtain calcium carbonate, and this with nitric acid to obtain calcium nitrate. Or the calcium phosphate may be treated with nitric acid, and the product used for treating more sodium chloride.

306,086. Calcium-Alkali Phosphates. A. Messerschmitt, Villa Miramar, Suvigliana-Lugano, Switzerland. International Convention date, February 15, 1928. Addition to 300,961. (See The Chemical Age, Vol. XX, p. 82.)

Raw phosphates are sintered with alkali sulphate and a strong reducing agent such as carbon or iron pyrites, or calcium sulphide. In the latter case, sulphur is entirely eliminated from the reaction mixture. The extraction residues of the Leblanc soda process may be used.

306,094–5. Aluminium Compounds. U. B. Voisin, 53, Quai de Bosc, Sète, Herault, France. International Convention date, February 15, 1928.

306,094. Bauxite is treated with hydrochloric acid gas at 150°–500° C., with or without chlorine, to convert the iron into ferric chloride and volatilise it. The gases are washed with sulphuric acid to recover the iron as sulphate and expel hydrochloric acid for use again.

306,095. Finely pulverised bauxite and powdered fluorspar are heated with concentrated sulphuric acid to obtain iron and aluminium sulphates and expel silicon fluoride. The sulphates are dissolved in water, and treated with calcium chloride to obtain a solution of chlorides, which is treated with lime to precipitate ferric and aluminium hydrates. These may be treated with soda lye to form sodium aluminate, which is treated with carbon dioxide to obtain alumina.

306,097. ALIPHATIC ACIDS. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, February 15, 1928. Addition to 300,923. (See THE CHEMICAL AGE, Vol. XX, p. 82.)

Propionic, butyric and isobutyric acids are concentrated by distilling with a halogenated hydrocarbon. The concentrated acid and halogen compound are separated by distillation.

306,103. FERTILISERS. Stockholms Superfosfat Fabriks Aktiebolag, 4, Kornhamnstorg, Stockholm. International Convention date, February 15, 1928.

Raw phosphate is treated with a mixture of sulphuric and nitric acids, and then with ammonium carbonate to obtain two fertilisers, one consisting of calcium phosphate soluble in citric acid, and the other a mixture or double salt of ammonium sulphate and ammonium nitrate having the formula $(NH_4)_2SO_4.2NH_4NO_3$. The precipitate consists of di- or tricalcium phosphate mixed with calcium carbonate and the liquid is a solution of ammonium sulphate and nitrate.

306,107. TREATING IRON ORES. Comstock and Wescott, Inc., 80, Federal Street, Boston, U.S.A. (Assigness of E. W. Wescott, P.O. Box 918, Niagara Falls, N.Y., U.S.A.). International Convention date, February 16, 1928.

Sulphide ores are chlorinated to ferric chloride which is then treated with hot air at 700°–800° C. to obtain ferric oxide and chlorine. The chlorine is partly used to chlorinate further quantities of ore after first passing through sulphur to obtain sulphur chloride, and the remainder is used to chlorinate the ferrous chloride first obtained to ferric chloride.

306,382. CATALYTIC OXIDATION OF AMMONIA. E. I. Du Pont de Nemours and Co., Wilmington, Del., U.S.A. (Assigness of C. W. Davis, Swarthmore, Pa., U.S.A.). International Convention date, February 18, 1928.

Platinum-rhodium alloys containing 2–50 per cent. of rhodium are more resistant to high temperatures and more effective as catalysts than pure platinum for the catalytic oxidation of ammonia.

306,385 and 306,387. ESTERS. L. Schmidt, 30, Wentorferstrasse, Bergedorf, Hamburg, Germany. International Convention date, February 18, 1928.

306,385. Pinene is heated to boiling with a mixture of three molecular proportions of acetic anhydride and one molecular proportion of boric acid sufficient to esterify the transformed oil. Bornyl and isobornyl acetates are obtained.

306,387. Pinene is heated with organic acids in the presence of boron trioxide or mixed anhydrides of boric acid, the boron compounds being removed when the ester content of the oil is constant, and an organic or inorganic catalyst added. The catalyst may be anhydrous oxalic acid, benzene, sulphonic and toluene sulphonic acids, phosphoric, nitric, sulphuric, and hydrochloric acids.

306,414. AMINES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, February 18, 1928.

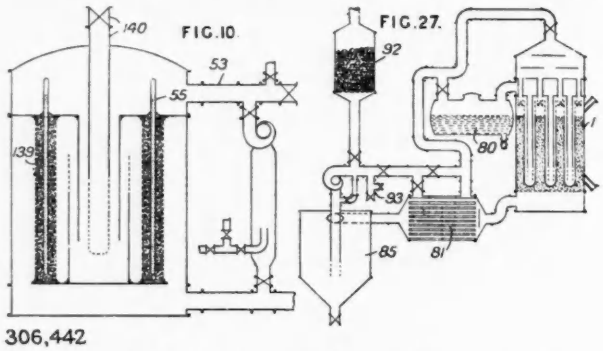
A phenol or hydrogenated phenol is treated with ammonia or an amine in the presence of hydrogen and a hydrogenation catalyst in gaseous or liquid phase at a raised temperature, and with or without pressure. Hydroaromatic amines are obtained, and examples are given.

306,415. DYES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, February 18, 1928.

Monoazo dyes are obtained by coupling a diazo compound of the benzene series, containing at least one negative group with a 2 : 3-hydroxy-naphthoyl-4[1]-alkyloxy-1[1]-naphthylamine.

306,442. CATALYTIC APPARATUS. Selden Co., 339, 2nd Avenue, Pittsburg, U.S.A. (Assignees of A. O. Jaeger, 9, North Grandview Avenue, Crafton, Pa., U.S.A.) International Convention date, February 20, 1928.

A converter is cooled by the reaction gas, and some or all of the reacted gas is freed from reaction products, further reacting gas is added, and the mixture re-circulated. The catalyst may be retained between grids in an annular layer 139, containing temperature equalisers 55. Fresh gas is admitted at 140 and re-circulated gas at 53. In another



306,442

apparatus suitable for the side chain oxidation of toluol, the toluol is vaporised in the vessel 80 by an oxidising gas, and the mixture passes through the converter 1 and heat exchanger 81 to the condenser 85, where benzaldehyde and benzoic acid are removed. The gas then passes through an absorber 92, oxygen is added at 93 and the gas passes through heat exchanger 81 and vaporiser 80 to the converter 1. A great variety of catalytic reactions may be carried out in this apparatus.

306,450. NITRILES. Deutsche Gold- und Silber-Scheideanstalt vorm. Roessler, 7, Weissfrauenstrasse, Frankfort-on-Main, Germany. International Convention date, February 20, 1928.

The process is for preparing N-substituted cyano-formarylides of the formula $\begin{matrix} R \\ Ar \end{matrix}\!\!>\!N\text{—}COCN$, where Ar represents a substituted or unsubstituted aromatic residue, and R a substituted or unsubstituted aromatic or aliphatic residue, which may be connected to the former residue. The corresponding formic acid chlorides are dissolved or suspended in pyridine, and treated with hydrocyanic acid.

LATEST NOTIFICATIONS.

309,565. Process for obtaining ammonium sulphate and sulphur from ammonium thiocyanate. Hansen, Dr. C. J. April 14, 1928.

309,487. Process for the manufacture of synthetic resin products. Kunstharzfabrik Dr. F. Pollak Ges. April 11, 1928.

309,582. Catalytic oxidation of ammonia. Selden Co. April 14, 1928.

309,583. Catalytic oxidation of ammonia. Selden Co. April 14, 1928.

309,408. Partitions for separating the electrolytic products in the fusion electrolysis of chlorides, particularly of magnesium. I.G. Farbenindustrie Akt.-Ges. December 23, 1927.

309,454. Process for the manufacture of anthraquinone derivatives. I.G. Farbenindustrie Akt.-Ges. April 10, 1928.

309,598. Process for the purification of impure titanium dioxide Deutsche Gasglühlicht-Auer-Ges. April 14, 1928.

309,501. Apparatus for the low-temperature distillation of pulverulent or dusty carbonaceous materials. I.G. Farbenindustrie. Akt.-Ges. April 11, 1928.

309,552. Manufacture of acid wool dyestuffs. I.G. Farbenindustrie. Akt.-Ges. April 12, 1928.

309,558. Process for the manufacture of artificial silk, in particular cellulose acetate silk. I.G. Farbenindustrie Akt.-Ges. April 12, 1928.

309,604. Manufacture of phosphoric acid and cement. I.G. Farbenindustrie Akt.-Ges. April 13, 1928.

309,605. Process and apparatus for the electrolysis of molten substances. I.G. Farbenindustrie Akt.-Ges. April 14, 1928.

309,610. Process for the manufacture of water-soluble derivatives of aromatic diazo compounds. I.G. Farbenindustrie Akt.-Ges. April 14, 1928.

309,834. Process for the purification of sulphuric acid solutions of titanium sulphate. I.G. Farbenindustrie Akt-.Ges. April 13, 1928.

Specifications Accepted with Date of Application

287,846. Esters and other organic compounds, Manufacture of. E. I. Du Pont de Nemours and Co. March 26, 1927.

292,950. N-oxyethyl derivatives of 2-amino-1-oxybenzene, Manufacture of. I.G. Farbenindustrie Akt.-Ges. June 27, 1927.

293,450. Sulphuric acid and oleum by the contact process. Metallges. Akt.-Ges. July 7, 1927.

293,010. Metallurgical furnaces. B. Talbot. June 30, 1927.

297,053. Mechanical roasting furnaces. Metallges. Akt.-Ges. September 13, 1927.

308,995. Destructive hydrogenation of carbonaceous materials. H. A. Humphrey and Imperial Chemical Industries, Ltd. November 30, 1927.

309,057. Carrying out reactions at high pressures and temperatures J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) December 2, 1927.

309,001. Synthesizing nitrogen compounds. H. E. Potts. (*H. Plauson.*) December 30, 1927.

309,002. Synthesizing liquid hydrocarbons. H. E. Potts. (*H. Plauson.*) December 30, 1927.

308,958. Azo dyestuffs. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) December 30, 1927.

309,216. Azo dyestuffs. O. Y. Imray. (*I.G. Farbenindustrie Akt.-Ges.*) December 31, 1927.

309,005. Oxygenated organic compounds. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) December 31, 1927.

309,061. Sulphur dyestuff pastes. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) December 31, 1927.

309,102. Condensation products of the benzo-diazine series. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) December 31, 1927.

309,107. Monohalogenated naphthostyril compounds. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) January 3, 1928.

309,108. Methylol derivatives of urethanes. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) January 3, 1928.

309,227. Cracking oils. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) October 3, 1927.

309,228. Destructive hydrogenation. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) October 3, 1927.

309,229. Extracting oils from carbonaceous materials by solvents under pressure. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) October 3, 1927.

309,199. Liquid hydrocarbons from olefines. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) September 28, 1927.

309,200. Mono and polyhydric alcohols. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) September 28, 1927.

309,202. Calcium and other benzoates, and benzoic acid. D. A. W. Fairweather, E. G. Beckett, J. Thomas and Scottish Dyes, Ltd. September 29, 1927.

309,051. Titanium compounds. F. G. C. Stephens, L. J. Anderson and W. A Cash. October 1, 1927.

309,237. Purifying caustic alkalies. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) January 11, 1928.

309,239. Hydrogenation of coal, etc. K. Gordon and Imperial Chemical Industries, Ltd. January 14, 1928.

309,249. 3-hydroxy-4-amino-phenyl-arsinic acid. I. E. Balaban and May and Baker, Ltd., January 24, 1928.

309,258. Effecting chemical reactions under pressure. Synthetic Ammonia and Nitrates, Ltd., and A. Rule. February 1, 1928.

309,268. Treating chloride solutions. S. I. Levy and G. W. Gray. February 10, 1928.

309,269. Recovery of copper. S. I. Levy and G. W. Gray. February 10, 1928.

309,288. Recovery of zinc. L. F. W. Leese. March 19, 1928.

309,298. Sulphuric acid and cement. K. Gordon and Imperial Chemical Industries, Ltd. March 31, 1928.

309,299. Granular fertilisers. C. C. Smith and Imperial Chemical Industries, Ltd. March 31, 1928.

309,300. Hydrogenation of pyridine. Technical Research Works, Ltd., and E. J. Lush. March 31, 1928.

309,307. Metallurgy of tin. E. A. Ashcroft. April 5, 1928.

Applications for Patents

Alcock, H. E. Manufacture of barium compounds. 12,237. April 19.

Birchall, T., Coffey, S., and Imperial Chemical Industries, Ltd. Manufacture of N, N¹—sulphide derivatives of amines. 12,107. April 18.

Brightman, R., and Imperial Chemical Industries, Ltd. Dyeing regenerated cellulose materials. 12,252. April 19.

Carpmael, A. Manufacture of indigoid vat dyestuffs. 12,068. April 18. (Germany, May 26, 1928.)

Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Discharge printing on wool. 11,601. April 15.

Carpmael, A. Manufacture of dyestuffs. 11,602. April 15.

Carpmael, A. Manufacture of tanning agents. 11,603, 11,604. April 15.

Carpmael, A. Manufacture of diazonium salts of complex metallic halogen acids. 11,813. April 16.

Carpmael, A. Manufacture of indigoid vat dyestuffs. 11,814 April 16.

Carpmael, A. Manufacture of condensation products from aldehydes and phenols. 12,243. April 19.

Coley, H. E. Distillation process for zinc oxides. 11,913. April 17.

Davidson, A., Henesey, F., and Imperial Chemical Industries, Ltd. Leuco-indigo preparations. 11,668. April 15.

Du Pont de Nemours and Co., E.I., and Triggs, W. W. Manufacture of concentrated nitric acid. 11,892. April 17.

Du Pont de Nemours and Co., E.I. Cellulose ether compositions. 11,559. April 15. (United States, May 24, 1928.)

Du Pont de Nemours and Co., E.I. Coating-compositions. 11,560. April 15th. (United States, May 18, 1928.)

Electro Bleach and By-Products, Ltd., Hollins, J., and Jepson, D. Electrodeposition of metals. 11,965, 11,966, 11,967. April 17. (February 25, 1928.).

Electro Bleach and By-Products, Ltd., Hollins, J., and Jepson, D. Electrodeposition of metals. 12,030. 12,031. April 18. (February 25, 1928.)

Grinten, F. van der. Preparation of diazotypes. 12,333. April 20. (Holland, February 22.).

Harper, H., and Imperial Chemical Industries, Ltd. Recovery of hydrogen from destructive hydrogenation processes. 12,143. April 19.

Harrison, C. F. R., and Imperial Chemical Industries, Ltd. Destructive hydrogenation of carbonaceous materials. 11,941, 11,942. April 17.

Harrison, C. F. R., and Imperial Chemical Industries, Ltd. Production of hydrogen. 12,142. April 19.

Hooley, L. J., Scottish Dyes, Ltd., Smith, W., and Thomas, J. Manufacture of dyestuffs. 11,827. April 16.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Carrying out reactions with gases. 11,607. April 15.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Apparatus for carrying out endothermic catalytic reactions. 11,608. April 15.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Apparatus for the separation of gas mixtures. 11,609. April 15.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of urea. 11,610. April 15.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Means for keeping cut flowers, etc., fresh. 11,910. April 17.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of hydroaromatic hydrocarbons. 11,911. April 17.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Production of vat dyestuffs. 12,056. April 18.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of condensation products from carbamides, etc. 12,213. April 19.

I.G. Farbenindustrie Akt.-Ges. Purification of sulphuric acid solutions of titanium sulphate. 11,600. April 15. (Germany, April 13, 1928.)

I.G. Farbenindustrie Akt.-Ges. Cleaning wool material stained with tar and pitch tips. 11,774. April 16. (Germany, April 16, 1928.)

I.G. Farbenindustrie Akt.-Ges. Treating artificial threads. 11,919. April 17. (Germany, May 11, 1928.)

I.G. Farbenindustrie Akt.-Ges. Softening water. 11,940. April 17. (Germany, April 17, 1928.)

I.G. Farbenindustrie Akt.-Ges. Manufacture of agents for vulcanising rubber, etc. 12,312. April 20. (Germany, May 10, 1928.)

Imperial Chemical Industries, Ltd. Leuco-indigo preparations. 11,668. April 15.

Imperial Chemical Industries, Ltd. Destructive hydrogenation of carbonaceous material. 11,941. 11,942. April 17.

Imperial Chemical Industries, Ltd. Promoting crystal growth. 12,086. April 18.

Imperial Chemical Industries, Ltd. Manufacture of age-resisting rubber compounds. 12,106. April 18.

Imperial Chemical Industries, Ltd. Treatment of coke oven, etc., gas. 12,307, 12,308. April 20.

Imperial Chemical Industries, Ltd. Recovery of acetylene from gaseous mixtures. 12,318. April 20.

Neumann, E. Manufacture of butyl alcohol. 12,096. April 18.

Primrose, J., Scottish Dyes, Ltd., Smith, W., and Thomas, J. Manufacture of dyestuff intermediates. 11,672. April 15.

Schering-Kahlbaum Akt.-Ges. Manufacture of C-alkylated phenols. 11,598. April 15. (Germany, April 16, 1928.)

Schering-Kahlbaum Akt.-Ges. Manufacture of hydrogenated, etc., compounds. 12,341. April 20. (Germany, April 21, 1928.)

Schering-Kahlbaum Akt.-Ges. Manufacture of hormones. 12,342. April 20. (Germany, April 21, 1928.)

Scottish Dyes, Ltd., Smith, W., and Thomas, J. Production of dyestuff intermediates. 11,826. April 16.

Soc. of Chemical Industry in Basle. Manufacture of dyestuffs, etc. 12,220. April 19. (Switzerland, April 19, 1928.)

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £30 per ton; powder, £32 per ton; extra fine powder, £34 per ton.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength and locality.

ACID NITRIC, 80° TW.—£21 10s. to £27 per ton, makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages free.

BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s per ton d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2 cwt. bags carriage paid any station in Great Britain.)

CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 3d. to 1s. 8d. per gall. pyridinised industrial, 1s. 5d. to 1s. 10d. per gall.; mineralised 2s. 4d. to 2s. 8d. per gall.; 64 O.P., 1d. extra in all cases.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3⅞d. per lb., ex-wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.r. London.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.b. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—6¼d. to 6⅝d. per lb. Crude 60's, 1s. 10d. per gall.

ACID CRESYLIC 99/100.—2s. 3d. to 2s. 10d. per gall. 97/99.—2s. 1d. to 2s. 2d. per gall. Pale, 95%, 1s. 10d. to 1s. 11d. per gall. Dark, 1s. 7½d. to 1s. 8½d.

ANTHRACENE.—A quality, 2d. to 2½d. per unit. 40%, £4 10s. per ton.

ANTHRACENE OIL, STRAINED, 1080/1090.—5½d. to 6d. per gall. 1100, 6d. to 6¼d. per gall.; 1110, 6½d. per gall. Unstrained, 6⅝d. to 7d. per gall.

BENZOLE.—Prices at works: Crude, 10d. to 11d. per gall.; Standard Motor, 1s. 5d. to 1s. 6d. per gall.; 90%, 1s. 7d. to 1s. 8d. per gall; Pure, 1s. 10d. to 1s. 11d. per gall.

TOLUOLE.—90%, 1s. 7½d. to 2s. per gall. Firm. Pure, 2s. to 2s. 2d. per gall.

XYLOL.—1s. 5d. to 2s. per gall. Pure, 1s. 8d. to 1s. 9d. per gall.

CREOSOTE.—Cresylic, 20/24%, 7½d. to 7⅝d. per gall.; Heavy, 6½d. to 6¾d. per gall. Middle oil, 4⅞d. to 5⅛d. per gall. Standard specification, 3⅝d. to 4⅞d. per gall. Light gravity, 3⅜d. to 3⅝d. per gall. ex works. Salty, 7½d. per gall.

NAPHTHA.—Crude, 8½d. to 9d. per gall. Solvent, 90/160, 1s. 3½d. to 1s. 4d per gall. Solvent, 95/160, 1s. 4d. to 1s. 8d. per gall. Solvent 90/190, 1s. 1d. to 1s. 4d. per gall.

NAPHTHALENE, CRUDE.—Drained Creosote Salts, £4 10s. to £5 per ton. Whizzed, £5 per ton. Hot pressed, £8 10s. per ton.

NAPHTHALENE.—Crystals, £12 5s. to £14 10s. per ton. Quiet Flaked, £14 to £15 per ton, according to districts.

PITCH.—Medium soft, 31s. 6d. to 35s. per ton, f.o.b., according to district. Nominal.

PYRIDINE.—90/140 4s. to 4s. 6d. per gall. 90/160, 3s. 9d. to 4s. per gall. 90/180, 2s. to 3s. per gall. Heavy, 1s. 6d. to 1s 9d. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. per lb. 100%.

ACID BENZOIC.—1s. 8½d. per lb.

ACID GAMMA.—4s. 6d. per lb.

ACID H.—3s. per lb.

ACID NAPHTHIONIC.—1s. 6d. per lb.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb.

ACID SULPHANILIC.—8½d. per lb.

ANILINE OIL.—8d. per lb. naked at works.

ANILINE SALTS.—8d. per lb. naked at works.

BENZALDEHYDE.—2s. 3d. per lb.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

BENZOIC ACID.—1s. 8½d. per lb.

o-CRESOL 29/31° C.—5½d. per lb.

m-CRESOL 98/100%.—2s. 3d. to 2s. 6d. per lb.

p-CRESOL 32/34° C.—2s. 3d. to 2s. 6d. per lb.

DICHLORANILINE.—1s. 10d. per lb.

DIMETHYLANILINE.—1s. 11d. per lb.

DINITHROBENZENE.—8d. per lb. naked at works. £75 per ton.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 7½d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.

DIPHENYLAMINE.—2s. 10d. per lb. d/d.

a-NAPHTHOL.—2s. per lb. d/d.

B-NAPHTHOL.—10d. per lb. d/d.

a-NAPHTHYLAMINE.—1s. 3d. per lb.

B-NAPHTHYLAMINE.—3s. per lb.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. per lb. d/d.

p-NITRANILINE.—1s. 8d. per lb.

NITROBENZENE.—6d. per lb. naked at works.

NITRONAPHTHALENE.—1s. 3d. per lb.

R. SALT.—2s. 2d. per lb.

SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.

o-TOLUIDINE.—8d. per lb.

p-TOLUIDINE.—1s. 9d. per lb. naked at works.

m-XYLIDINE ACETATE.—2s. 6d. per lb. 100%.

N. W. ACID.—4s. 9d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £9 15s. to £10 5s. per ton. Grey, £16 10s. to £17 10s. per ton. Liquor, 9d. per gall.

ACETONE.—£78 per ton.

CHARCOAL.—£6 to £8 10s. per ton, according to grade and locality.

IRON LIQUOR.—1s. 3d. per gall. 32° Tw. 1s. per gall. 24° Tw.

RED LIQUOR.—9d. to 10½d. per gall. 16° Tw.

WOOD CRESOTE.—1s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 8d. to 3s. 11d. per gall. Solvent, 4s. to 4s. 3d. per gall.

WOOD TAR.—£3 10s. to £4 10s. per ton.

BROWN SUGAR OF LEAD.—£38 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 3d. per lb. according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—1s. 9d. per lb.

BARYTES.—£5 10s. to £7 per ton, according to quality.

CADMIUM SULPHIDE.—5s. to 6s. per lb.

CARBON BISULPHIDE.—£25 to £27 10s. per ton, according to quantity

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£45 to £54 per ton, according to quantity, drums extra.

CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.

DIPHENYLGUANIDINE.—3s. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—4⅝d. to 5⅞d. per lb.

LAMP BLACK.—£32 10s. per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPONE, 30%.—£23 per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton, f.o.r. London.

SULPHUR.—£10 to £12 per ton, according to quality.

SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra

SULPHUR PRECIP. B. P.—£55 to £60 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb., carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—6s. 10d. to 7s. per lb.

ZINC SULPHIDE.—8d. to 11d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 4d to 2s 5d. per lb.

ACID, BENZOIC, B.P.2s. to 3s. 3d. per lb., according to quantity. Solely ex Gum, 1s. 3d. to 1s. 4d. per oz., according to quantity.

ACID, BORIC B.P.—Crystal, 36s. to 39s. per cwt.; powder, 40s. to 43s. per cwt.; extra fine powder, 42s. per cwt., according to quantity. Carraige paid any station in Great Britain, in ton lots.
ACID, CAMPHORIC.—19s. to 21s. per lb.
ACID, CITRIC.—2s. 1½d. to 2s. 3d. per lb., less 5%.
ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.
ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d.
ACID, SALICYLIC, B.P. PULV.—1s. 6d. per lb. in 1 cwt. lots. Technical.—10½d. to 11½d. per lb.
ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.
ACID, TARTARIC.—1s. 4½d. per lb., less 5%.
ACETANILIDE.—1s. 5d. to 1s. 8d. per lb. for quantities.
AMIDOL.—7s. 6d. to 9s. per lb., d/d.
AMIDOPYRIN.—7s. 9d. to 8s. per lb.
AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity. 18s. per lb. ex Gum.
AMMONIUM CARBONATE B.P.—£36 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated, 1s. per lb.
ATROPHINE SULPHATE.—9s. per oz.
BARBITONE —5s. 9d. to 6s. per lb.
BENZONAPHTHOL.—3s. to 3s. 3d. per lb. spot.
BISMUTH CARBONATE.—9s. 9d. per lb.
BISMUTH CITRATE.—9s. 3d. per lb.
BISMUTH SALICYLATE.—8s. 9d. per lb.
BISMUTH SUBNITRATE.—8s. 3d. per lb.
BISMUTH NITRATE.—Cryst. 5s. 9d. per lb.
BISMUTH OXIDE.—12s. 3d. per lb.
BISMUTH SUBCHLORIDE.—10s. 9d. per lb.
BISMUTH SUBGALLATE.—7s. 9d. per lb. Extra and reduced prices for smaller and larger quantities of all bismuth salts respectively.
BISMUTHI ET AMMON LIQUOR.—Cit. B.P. in W. Qts. 1s. 0½d. per lb.; 12 W. Qts. 11½d. per lb.; 36 W Qts. 11d. per lb.
BORAX B.P.—Crystal, 24s. to 27s. per cwt.; powder, 25s. to 28s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.
BROMIDES.—Ammonium, 2s. per lb.; potassium, 1s. 8½d. per lb.; granular, 1s. 9½d. per lb.; sodium, 1s. 11d. per lb. Prices for 1 cwt. lots.
CALCIUM LACTATE.—B.P., 1s. 2½d. to 1s. 3½d. per lb.
CAMPHOR.—Refined flowers, 2s. 11d. to 3s. per lb., according to quantity; also special contract prices.
CHLORAL HYDRATE.—3s. 1d. to 3s. 4d. per lb.
CHLOROFORM.—2s. 5½d. to 2s. 7½d. per lb., according to quantity.
CREOSOTE CARBONATE.—6s. per lb.
ETHERS.—S.G. ·730—11d. to 1s. per lb., according to quantity other gravities at proportionate prices.
FORMALDEHYDE, 40%.—37s. per cwt., in barrels, ex wharf.
GUAIACOL CARBONATE.—4s. 6d. to 4s. 9d. per lb.
HEXAMINE.—2s. 3d. to 2s. 6d. per lb.
HOMATROPINE HYDROBROMIDE.—30s. per oz.
HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.
HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. Winchesters, 2s. 11d. per gall. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 4s. per gall.
HYDROQUINONE.—3s. 9d. to 4s. per lb., in cwt. lots.
HYPOPHOSPHITES.—Calcium, 2s. 9d. per lb.; potassium, 3s. per lb.; sodium, 2s. 11d. per lb., in 1 cwt. lots, assorted.
IRON AMMONIUM CITRATE.—B.P., 2s. 9d. per lb. Green, 3s. 1d. per lb. Prices for 1 cwt. lots. U.S.P., 2s. 9d. to 3s. per lb.
IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.
IRON QUININE CITRATE.—B.P., 8¾d. to 9¼d. per oz., according to quantity.
MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.
MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb.
MENTHOL.—A.B.R. recrystallised B.P., 22s. per lb. net; Synthetic, 11s. to 12s. per lb.; Synthetic detached crystals, 11s. to 16s. per lb., according to quantity; Liquid (95%), 9s. 6d. per lb.
MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, crystals, 8s. 4d. to 8s. 5d. per lb., levig., 7s. 10d. to 7s. 11d. per lb.; Corrosive Sublimate, Lump, 6s. 7d. to 6s. 8d. per lb., Powder, 6s. to 6s. 1d. per lb.; White Precipitate, Lump, 6s. 9d. to 6s. 10d. per lb., Powder, 6s. 10d. to 6s. 11d. per lb., Extra Fine, 6s. 11d. to 7s. per lb.; Calomel, 7s. 2d. to 7s. 3d. per lb.; Yellow Oxide, 7s. 8d. to 7s. 9d. per lb.; Persulph, B.P.C., 6s. 11d. to 7s. per lb.; Sulph. nig., 6s. 8d. to 6s. 9d. per lb. Special prices for larger quantities.
METHYL SALICYLATE.—1s. 5d. to 1s. 8d. per lb.
METHYL SULPHONAL.—18s. 6d. to 20s. per lb.
METOL.—9s. to 11s. 6d. per lb. British make.
PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.
PARALDEHYDE.—1s. 4d. per lb.
PHENACETIN.—2s. 6d. to 2s. 9d. per lb.
PHENAZONE.—3s. 11d. to 4s. 2d. per lb.
PHENOLPHTHALEIN.—6s. to 6s. 3d. per lb.
POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—97s. per cwt., less 2½ per cent
POTASSIUM CITRATE.—B.P.C., 2s. 7d. per lb. in 1 cwt. lots.
POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.
POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.
POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included f.o.r. London.
POTASSIUM PERMANGANATE.—B.P. crystals, 5½d. per lb., spot.
QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., bulk in 100 oz. tins.
RESORCIN.—2s. 10d. to 3s. per lb., spot.
SACCHARIN.—47s. per lb.; in quantity lower.
SALOL.—2s. 3d. to 2s. 6d. per lb.
SODIUM BENZOATE, B.P.—1s. 8d. to 1s. 11d. per lb.
SODIUM CITRATE, B.P.C., 1911.—2s. 4d. per lb., B.P.C. 1923—2s. 7d. per lb. Prices for 1 cwt. lots. U.S.P., 2s. 6d. to 2s. 9d. per lb., according to quantity.
SODIUM FERROCYANIDE.—4d. per lb., carriage paid.
SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 per ton, d/d consignee's station in 1-cwt. kegs.
SODIUM NITROPRUSSIDE.—16s. per lb.
SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—100s. to 105s. per cwt. Crystals, 5s. per cwt. extra.
SODIUM SALICYLATE.—Powder, 2s. 2d. to 2s. 4d. per lb. Crystal, 2s. 3d. to 2s. 5d. per lb.
SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 1d. per lb.
SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £28 10s. per ton, according to quantity. Delivered U.K.
SULPHONAL.—9s. 6d. to 10s. per lb.
TARTAR EMETIC, B.P.—Crystal or powder, 2s. 1d. to 2s. 3d. per lb.
THYMOL.—Puriss., 9s. 1d. to 9s. 4d. per lb., according to quantity. Firmer. Natural, 12s. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.
AUBEPINE (EX ANETHOL).—11s. per lb.
AMYL ACETATE.—2s. 6d. per lb.
AMYL BUTYRATE.—5s. per lb.
AMYL SALICYLATE.—2s. 9d. per lb.
ANETHOL (M.P. 21/22° C.).—5s. 6d. per lb.
BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—1s. 10d. per lb.
BENZYL ALCOHOL FREE FROM CHLORINE.—1s. 10d. per lb.
BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.
BENZYL BENZOATE.—2s. 3d. per lb.
CINNAMIC ALDEHYDE NATURAL.—14s. per lb.
COUMARIN.—8s. 6d. per lb.
CITRONELLOL.—10s. per lb.
CITRAL.—8s. 3d. per lb.
ETHYL CINNAMATE.—6s. 6d. per lb.
ETHYL PHTHALATE.—2s. 9d. per lb.
EUGENOL.—12s. 6d. per lb.
GERANIOL (PALMAROSA).—22s. per lb.
GERANIOL.—6s. 6d. to 10s. per lb.
HELIOTROPINE.—5s. 6d. per lb.
ISO EUGENOL.—14s. 3d. per lb.
LINALOL.—Ex Bois de Rose, 12s. 6d. per lb. Ex Shui Oil, 10s. per lb.
LINALYL ACETATE.—Ex Bois de Rose, 16s. per lb. Ex Shui Oil, 12s. per lb.
METHYL ANTHRANILATE.—8s. per lb.
METHYL BENZOATE.—4s. per lb.
MUSK KETONE.—34s. per lb.
MUSK XYLOL.—7s. per lb.
NEROLIN.—3s. 9d. per lb.
PHENYL ETHYL ACETATE.—11s. per lb.
PHENYL ETHYL ALCOHOL.—10s. per lb.
RHODINOL.—52s. per lb.
SAFROL.—2s. 3d. per lb.
TERPINEOL.—1s. 6d. per lb.
VANILLIN, EX CLOVE OIL.—18s. 6d. per lb. Ex Guaiacol, 15s. 6d. per lb.

Essential Oils

ALMOND OIL.—Foreign S.P.A., 10s. 6d. per lb.
ANISE OIL.—3s. per lb.
BERGAMOT OIL.—23s. 6d. per lb.
BOURBON GERANIUM OIL.—21s. per lb.
CAMPHOR OIL.—1s. 3d. per lb.
CANANGA OIL, JAVA.—12s. per lb.
CASSIA OIL, 80/85%.—6s. per lb.
CINNAMON OIL LEAF.—9s. per oz.
CITRONELLA OIL.—Java, 2s. per lb., c.i.f. U.K. port. Ceylon, pure, 2s. 2d. per lb.
CLOVE OIL (90/92%).—10s. 6d. per lb.
EUCALYPTUS OIL, AUSTRALIAN, B.P. 70/75%.—1s. 10½d. per lb.
LAVENDER OIL.—Mont Blanc, 38/40%, 17s. 6d. per lb.
LEMON OIL.—19s. per lb.
LEMONGRASS OIL.—4s. per lb.
ORANGE OIL, SWEET.—25s. per lb.
OTTO OF ROSE OIL.—Anatolian, 35s. per oz. Bulgarian, 75s. per oz.
PALMA ROSA OIL.—13s. per lb.
PEPPERMINT OIL.—English, 87s. 6d. per lb.; Wayne County, 14s. 6d. per lb.; Japanese, 7s. 6d. per lb.
PETITGRAIN.—9s. per lb.
SANDALWOOD.—Mysore, 28s. per lb.: 90/95%. 18s. 9d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, April 25, 1929.

BUSINESS, on the whole, has been fair since our last report, and there is very little of outstanding interest to mention. Prices in the main continue firm, with one or two products noticeably in short supply. A much larger volume of inquiry on export account is being received.

General Chemicals

ACETONE.—No change has to be reported in this product, the market keeping extremely firm at £75/85 per ton, according to quantity, and with supplies still rather short.

ACETIC ACID.—Quite a fair amount of business is passing with the product firm at £36 10s./£37 10s., 80% technical quality.

ACID CITRIC.—Higher prices have been quoted during the past few days, and material is scarce for near delivery. Price nominally 2s. 2d. per lb., less 5%.

ACID FORMIC.—The demand for this product is somewhat slack, and price is inclined to ease slightly at about £42 per ton for 85%.

ACID LACTIC.—A steady demand continues in the market at £43 per ton for the technical pale quality, 50% weight.

ACID OXALIC.—Satisfactory substantial business has been concluded, with the market firm at £30 10s/£32, according to quantity. The forward position is also firm.

ACID TARTARIC.—An increase in the demand is reported, with price firming at 1s. 4¾d., less 5%.

ALUMINA SULPHATE.—The brisk demand continues, with the product extremely short for near delivery. Price is firmly maintained at £7 15s. to £8 for 17/18% technically free from iron quality.

AMMONIUM CHLORIDE.—Prices continue firm and demand quite satisfactory

ARSENIC.—This product appears flat, with inquiry only for small parcels. Price shows no further change at about £16 5s. per ton, f.o.r. for mines. Foreign material is competing.

BARIUM CHLORIDE.—Makers have advanced their prices slightly and early delivery is practically unobtainable. The price for spot material in this country is firm at £11 10s./£12 per ton, the forward position being extremely firm.

CREAM OF TARTAR.—Better trading has been done in this product, and the price is inclining to be slightly higher. Inquiry is increasing, and the price for spot material is about £94 /£98 10s. per ton, 99/100%.

COPPER SULPHATE.—After being somewhat erratic, and the price now settling, and with the metal market steadying, it is hoped that further violent fluctuations will be avoided. At the time of writing, the price is about £28 10s./£30 per ton for best brands, according to quantity. The demand is brisk.

FORMALDEHYDE.—A steady demand continues, and price is unchanged at £39 per ton.

LEAD ACETATE.—Following the adjustment in metal prices, this product has been slightly reduced, and stands at about £44 for white and £43 for brown, with the demands improving.

LEAD NITRATE.—In fair request at about £36.

LIME ACETATE.—The grey quality is in little better supply, and the price continues firm at £18 per ton.

LITHOPONE.—Steady at £19 15s./£22.

METHYL ACETONE.—Steady conditions rule this market with the price at £58/£60 per ton.

POTASSIUM CARBONATE AND CAUSTIC.—Unchanged, and in steady request.

POTASSIUM CHLORATE.—Firm and rather on the short side for near delivery. Inquiry is good at round about £28/£30 per ton.

POTASSIUM PERMANGANATE.—The B.P. quality has been in fair demand, with price unchanged at 5½d. per lb.

POTASSIUM PRUSSIATE.—Inquiry has been much brisker both for near and forward delivery. Prices are firm at £63 10s. to £65 10s., according to quantity.

SODIUM ACETATE.—Standard crystals continue short. The price is firm at £21 5s./£22, according to quantity, and the product has a firm tendency.

SODIUM BICHROMATE.—Fair business is being concluded at British makers' prices of 3½d. per lb., with the usual discount for contracts. The forward position is firm.

SODIUM HYPOSULPHITE.—The photographic quality is in good request, and price is unchanged, the commercial quality however is rather slow of sale.

SODA NITRATE.—Market holds firm at about £20, with fair demand.

SODIUM PHOSPHATE.—The dibasic quality in steady request at about £12 per ton, and tribasic at about £17 per ton.

SODA PRUSSIATE.—Better demand has been received, and the price continues firm at 4¾d./5¼d. per lb.

TARTAR EMETIC.—Slightly firm at about 11¾d. with the demand improving.

ZINC SULPHATE.—Quiet. Conditions rule this market, and prices unchanged at about £12 per ton.

Coal Tar Products

The coal tar products market is remaining very quiet, and prices are, if anything, weaker.

MOTOR BENZOL can be bought at 1s. 8d. per gallon, f.o.r., makers' works.

SOLVENT NAPHTHA is stronger, and is quoted at 1s. 3½d. to 1s. 4d. per gallon, f.o.r. makers' works.

HEAVY NAPHTHA is unchanged, at 1s. 3d. per gallon on rails.

CREOSOTE OIL remains weak, and can be bought at 4¼d. per gallon on rails in the North, and at 5¼d. per gallon in London.

CRESYLIC ACID remains unchanged, the 98/100% quality being quoted at about 1s. 10d. per gallon, and the dark quality 95/97% at about 1s. 8d. per gallon, f.o.r.

NAPHTHALENES.—The firelighter quality remains at about £4 10s. per ton, the 74/76 quality at £5 per ton, and the 76/78 quality at £6 to £6 5s. per ton.

PITCH.—With the end of the season, the market has taken a slightly firmer tone, and the price is about 32s. 6d. to 35s. per ton, f.o.b.

Nitrogen Products

Sulphate of Ammonia.—During the last week the position remained unchanged. Several sales were reported at £10 2s. per ton f.o.b. U.K. ports in single bags. It is understood that offerings for forward delivery have been made at under these prices. It is anticipated that the continental producers will announce a price for forward delivery next month. In the meantime there is only a small amount of speculative business taking place. It is reported that home sales are considerably in advance of last year. This is largely due to the fact that the season is an early one.

Nitrate of Soda.—Further sales of 35,000 tons have been reported in New York, but on account of the large quantities in store this has had no effect on the price. In continental countries good sales have been effected at scale prices.

Latest Oil Prices

LONDON, April 24.—LINSEED OIL was steady and occasionally 2s. 6d. per ton higher. Spot, ex mill, £28 17s. 6d.; May, £28 7s. 6d.; May-August, £28 12s. 6d.; and September-December, £29 5s., naked. RAPE OIL was inactive. Crude, extracted, £41; technical refined, £43, naked, ex wharf. COTTON OIL was quiet. Egyptian, crude, £27 10s.; refined common edible, £34; and deodorized, £36, naked, ex mill. TURPENTINE was irregular. American, spot, 45s. 3d.; May-June, 44s.; and July-December, 42s. 6d. per cwt.

HULL.—LINSEED OIL. Spot and April, £28 10s.; May and May-August, £28 12s. 6d.; September-December, £29. COTTON OIL.—Naked. Bombay crude, spot, £26; Egyptian crude, spot (new) and April and May-August, £26 5s.; edible refined, spot and April and May-August, £30 5s.; technical, spot, £30; deodorized, spot, £32 5s. PALM KERNEL OIL, crushed, naked, 5½ per cent., £34 10s. GROUNDNUT OIL, crushed-extracted, £32 10s.; deodorized, £36 10s.' SOYA OIL, extracted and crushed, £30; deodorized, £32 10s. RAPE OIL or/extracted, £41; refined, £43 per ton; net cash terms, ex mill.

South Wales By-Products

THERE is little change to report in South Wales by-product activities. The slight increase in the demand for pitch is maintained, but there is no sign of expansion. Prices are nominal at from 31s. to 32s. per ton f.o.b., and from 32s. 6d. to 35s. per ton delivered at works. Creosote continues to have a depressed market and prices are unchanged at from 4¼d. to 5¼d. per gallon. Benzol remains firm. There is an increase in the call for road tar but the demand is still far from satisfactory. Prices are unchanged, quotations being round 10s. to 12s. per 40-gallon barrel. Refined tars continue to enjoy a fair demand with prices unchanged, coke oven tar being quoted from 7d. to 7¾d. per gallon delivered, and gasworks tar at from 6¼d. to 6¾d. per gallon delivered. Whizzed naphthalene has scarcely any call round 100s. per ton, and a similar remark applies to crude at about 80s. per ton. Crude tar has a moderate call at from 25s. to 29s. per ton. Patent fuel and coke exports continue to be unsatisfactory. Patent fuel quotations are: 21s. to 21s. 6d., ex-ship Cardiff; 19s. 6d. to 20s. 3d., ex-ship Swansea. Coke: best foundry, 32s. 6d. to 36s. 6d.; furnace, 19s. to 21s.; and good foundry, from 26s. 6d. to 32s. per ton.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, April 24, 1929.

THERE has been a slight falling off in the amount of inquiry going around for heavy chemicals during the past week, possibly to some extent on account of the Budget. Business, however, remains fairly satisfactory, and within the past day or two there has been indication that the better tone noticed for some little time will be maintained and probably improved upon. There are no changes of any importance in prices to record.

Industrial Chemicals

ACETONE B.G.S.—£76 10s. to £85 per ton, ex wharf, according to quantity. Inquiry remains satisfactory.

ACID ACETIC.—98/100% glacial, £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80% pure, £37 10s. per ton, ex wharf; 80% technical, £37 10s. per ton, ex wharf.

ACID BORIC.—Crystals, granulated or small flakes, £30 per ton powder, £38 per ton packed in bags, carriage paid U.K. stations. There are a few fairly cheap offers made from the Continent.

ACID CARBOLIC, ICE CRYSTALS.—Unchanged at 6¼d. per lb., delivered or f.o.b. U.K. ports.

ACID CITRIC B.P. CRYSTALS.—Quoted 2s. 2½d. per lb., less 5% ex store, spot delivery. Offered at 2s. 2¼d per lb., less 5% ex wharf, prompt shipment from the Continent.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality 4s. per carboy. Dearsenicated quality, 5s. 6d. per carboy, ex works, full wagon loads.

ACID NITRIC.—80° quality, £24 10s. per ton, ex station, full truck loads.

ACID OXALIC 98/100%.—Price remains unchanged at about 3½d. per lb., ex store. Offered for prompt shipment from the Continent at 3¼d. per lb., ex wharf.

ACID SULPHURIC.—£2 15s. per ton, ex works for 144° quality; £5 15s. per ton for 168° quality; dearsenicated quality, 20s. per ton extra.

ACID TARTARIC B.P. CRYSTALS.—Spot material now quoted 1s. 4½d. per lb., less 5% ex wharf.

ALUMINA SULPHATE.—Spot material rather dearer at about £6 per ton, ex store. For prompt shipment, £5 15s. per ton, c.i.f. U.K. ports.

ALUM LUMP POTASH.—Unchanged at about £8 12s. 6d. per ton, c.i.f. U.K. ports. Crystal meal offered on spot at £9 per ton, ex store.

AMMONIA ANHYDROUS.—Quoted 9½d. per lb., carriage paid. Containers extra and returnable.

AMMONIA CARBONATE.—Lump quality quoted £36 per ton. Powdered, £38 per ton, packed in 5 cwt. casks, delivered U.K. stations or f.o.b. U.K. ports.

AMMONIA LIQUID 880.—Unchanged at about 2½d. to 3d. per lb., delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers crystals of British manufacture quoted £21 to £22 per ton, ex station. Fine white crystals offered from the Continent at about £17 5s. per ton, c.i.f. U.K. ports.

ANTIMONY OXIDE.—Now quoted £37 10s. per ton, c.i.f. U.K. port, prompt shipment from China. Spot material still on offer at £40, per ton, ex store.

ARSENIC, WHITE POWDERED.—Unchanged at £18 5s. per ton, ex wharf, prompt despatch from mines. Spot material quoted £19 15s. per ton, ex store.

BARIUM CHLORIDE.—Quoted £10 10s. per ton, c.i.f. U.K. ports, prompt shipment.

BLEACHING POWDER.—British manufacturers' contract price to consumers unchanged at £6 12s. 6d. per ton, delivered in minimum 4 ton lots. Continental now offered at about the same figure.

CALCIUM CHLORIDE.—Remains unchanged. British manufacturers price, £4 5s. per ton to £4 15s. per ton, according to quantity and point of delivery. Continental material on offer at £3 12s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works, or £4 12s. 6d. per ton, f.o.b. U.K. ports.

FORMALDEHYDE 40%.—Good inquiry and price unchanged at about £37 10s. per ton, ex store.

GLAUBER SALTS.—English material quoted £4 10s. per ton, ex station. Continental on offer at about £3 5s. per ton, ex wharf.

LEAD, RED.—On offer at £29 15s. per ton, ex store.

LEAD, WHITE.—Quoted £37 10s. per ton, c.i.f. U.K. ports.

LEAD ACETATE.—White crystals quoted £41 10s. per ton. Brown on offer about £39 10s. per ton, ex store.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store. In moderate demand.

METHYLATED SPIRIT.—Industrial quality 64 O.P. quoted 1s. 4d. per gallon, less 2½% delivered.

POTASSIUM BICHROMATE.—Quoted 4¼d. per lb. delivered U.K. or c.i.f. Irish ports, with an allowance of 2½% for minimum 2½ tons to be taken.

POTASSIUM CARBONATE, 96/98%.—Spot material now quoted £26 10s. per ton, ex store. Offered from the Continent, £25 10s. pet ton, c.i.f. U.K.

POTASSIUM CHLORATE, 99¾/100%.—Powder quoted £25 10s. per ton, ex wharf. Crystals 30s. per ton extra.

POTASSIUM NITRATE.—Refined granulated quality quoted £19 2s. 6d. per ton c.i.f. U.K. ports. Spot material on offer at about £20 10s. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 5¼d. per lb., ex wharf.

POTASSIUM PRUSSIATE (YELLOW).—Offered for prompt shipment from the Continent at 6¾d. per lb., ex wharf. Spot material quoted 7d. per lb., ex store.

SODA CAUSTIC.—Powdered 98/99%. Now £17 10s. per ton in drums, £18 15s. per ton in casks. Solid 76/77%, £14 10s. per ton in drums and 70/72%, £14 2s. 6d. per ton in drums, all carriage paid buyers' stations, minimum 4 ton lots, for contracts 10s. per ton less.

SODIUM ACETATE, 65%.—Crystal quality quoted about £19 15s. per ton, ex wharf; 73/78% anhydrous quality on offer at £20 per ton, carriage paid buyers' stations.

SODIUM BICARBONATE,—Refined recrystallised, £10 10s. per ton, ex quay or station; M.W. quality 30s. per ton less.

SODIUM BICHROMATE,—3¼d. per lb. delivered U.K. or c.i.f. Irish ports, less 2½% for contract, minimum 2½ tons.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station. Powdered or pea quality, 27s. 6d. per ton extra. Light soda ash, £7 1s. 3d. per ton, ex quay, minimum 4 ton lots with various reductions for contracts.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £8 17s. 6d. per ton, ex station, minimum 4 ton lots. Pea crystals on offer at £14 15s. per ton, ex station, minimum 4 ton lots. Prices for this year unchanged.

SODIUM NITRATE.—Ordinary quality quoted £10 12s. per ton carriage paid buyers' sidings, minimum 6 ton lots. Usual extras for small quantities and refined qualities.

SODIUM SULPHATE (SALTCAKE).—Prices 50s. per ton, ex works, 52s. 6d. per ton delivered for unground quality. Ground quality 2s. 6d. per ton extra.

SODIUM SULPHIDE.—Prices for home consumption: Solid, 60/62%, £9 per ton; broken, 60/63%, £10 per ton; crystals, 30/32%, £7 2s. 6d. per ton, delivered buyers' works on contract, minimum 4 ton lots. Special prices for some consumers. Spot material 5s. per ton extra.

SULPHUR.—Flowers, £12 per ton; roll, £10 10s. per ton; rock, £10 7s. 6d. per ton; ground American, £9 5s. per ton, ex store.

ZINC CHLORIDE, 98%.—British material now quoted £22 10s. per ton f.o.b. U.K. ports.

ZINC SULPHATE.—Offered from the Continent at about £10 5s. per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Proposed Fertiliser Plant for Saskatoon

ACCORDING to an announcement recently made at Saskatoon, by Mr. R. M. Buchanan, one of the incorporators of a new concern known as The Amalgamated Chemical and Fertiliser Co., Ltd., arrangements have been completed for the establishment in that city of a chemical fertiliser factory at a cost of $150,000. The plant of Marshall Sons and Co. (Canada), Ltd., has been purchased, and the company intends to manufacture chemical fertilisers, sulphuric acid, weed killer, sprays, and heavy chemicals. One of the products will be superphosphate fertiliser, and phosphate rock for its manufacture will be secured from the Banff district of Alberta and from parts of the State of Montana. The materials for the manufacture of the sulphuric acid required in the production of superphosphates will be shipped in rock form from the new Flin Flon mining area. A growing market for superphosphates in the prairie provinces is anticipated because of the value of this fertiliser in wheat growing.

Manchester Chemical Market

(From Our Own Correspondent.)

Manchester, April 25, 1929.

The textile finishing and allied industries locally are specifying for fair deliveries of heavy chemicals against contracts, although the quantities being taken are appreciably below what they would be if cotton trade conditions were anything like normal. The possibility of a lock-out in the cotton trade is not yet taken very seriously, though if such a situation does develop next month it will eventually react on business in chemicals. Prompt transactions are on a moderate scale and values generally are held.

Heavy Chemicals

A quiet business is going through in the case of hyposulphite of soda, current offers of which are at round £15 10s. per ton for the photographic quality and from £8 15s. per ton for the commercial. Bichromate of soda is attracting a fair amount of attention, and quotations for this material are maintained at round 3½d. per lb. With regard to phosphate of soda, buying interest in this section during the past week has been on quiet lines, though prices keep steady at from £11 10s. to £12 per ton. A moderate business is being done in chlorate of soda, values of which are unchanged at about 2¾d. per lb. There is a steady call for caustic soda at the contract range of £12 15s. to £14 per ton, according to quality. Both bichromate of soda and alkali meet with a fair volume of enquiry, and quotations are firm at £10 10s. and £6 per ton respectively. The demand for sulphide of sodium is on the quiet side at the moment, with the 60-65 per cent. concentrated solid quality obtainable at round £9 10s. per ton and the commercial grade at about £8. A quiet trade is passing in the case of saltcake, offers of which vary from £2 10s. to £2 15s. per ton, according to quantity. Values of prussiate of soda remain very firm at from 4½d. to 5d. per lb., and a fair weight of business has been reported on this market during the past week.

Caustic potash meets with a moderate volume of inquiry and prices are maintained at round £33 5s. per ton for prompt delivery of one to five-ton lots. Yellow prussiate of potash continues firm at from 6¾d. to 7¼d. per lb., according to quantity, and buying interest in this section of the market is fairly satisfactory. With regard to carbonate of potash, the demand for this material is relatively quiet at the moment, with current offers at from £26 per ton. There is some inquiry about for permanganate of potash, with the B.P. grade quoted at about 5½d. per lb., and the commercial quality at 5¼d. Bichromate of potash is selling in fair quantities on the basis of 4¼d. per lb., while a quiet trade is going through in the case of chlorate of potash at round 3¼d. per lb.

The demand for arsenic here has been on no more than moderate lines, but values are pretty much as they were at last report, white powdered, Cornish makes, being on offer at about £16 5s. per ton at the mines. Sulphate of copper has met with a fair sale on export account at from £30 to £30 10s. per ton, f.o.b. The lead products generally are on the quiet side, and values seem to be easing a little, nitrate being quoted at round £34 15s. per ton, with white acetate at £41 to £41 10s. per ton, and brown material at £40 to £40 10s. Prompt offers of the acetate of lime are not too plentiful at the moment, and quotations are steady at about £17 5s. per ton for the grey and £9 for the brown.

Acids and Tar Products

There is a moderate inquiry about for tartaric acid and prices are fully maintained at 1s. 4½d. per lb. Citric acid also is quite firm at from 2s. 2d. per lb. Oxalic acid meets with a quietly steady demand and quotations keep up at round £1 12s. per cwt., ex store. With regard to acetic acid, offers are quite steady and a fair business is being put through; the 80 per cent. commercial quality is quoted at about £36 per ton and the glacial at £67.

Among the by-products, pitch continues in relatively slow demand and prices are easy at down to £1 11s. per ton, f.o.b. Creosote oil is in quiet call both on home and export account at from 3¼d. to 3½d. per gallon, naked. Solvent naphtha is selling in fair quantities and prices are steady at round 1s. 3¾d. per gallon. Offers of crude carbolic range from 1s. 9d. to 1s. 10d. per gallon, according to position, for 60's, with crystals firm and in fair demand at 6½d. per lb., f.o.b.

Company News

Team By-Product Coke.—A loss of £7,999 is reported for the year ended November 30, increasing the debit balance to £72,238.

Glanzstoff Artificial Silk Co.—The company has declared a dividend of 18 per cent. for the year 1928, which is the same as for the previous year.

Goodlass, Wall and Co.—The directors announce an interim dividend of 7½ per cent. on the ordinary shares. Last year the interim dividend was 5 per cent.

American Smelting and Refining Co.—A quarterly dividend of $1 per share on the common stock, less tax, at 4s., is announced payable to holders of record April 12.

Leeds Fireclay Co.—An interim dividend of 6 per cent. on the preference shares and 4 per cent. on the ordinary shares will be paid on May 3, 1929, to shareholders registered on the books at the close of business on April 24, 1929.

Nitrate Railways Co.—The directors have declared a final dividend of 4 per cent., i.e., 8s. per share, on ordinary (unconverted) shares, making a total dividend for year 1928 of 6 per cent., against 5 per cent. last year. Also a final dividend of 4 per cent., i.e., 8s. per share on the preferred converted ordinary shares, making a total dividend for year 1928 of 6 per cent., both less income-tax.

Bryant and May, Ltd.—The board have resolved to recommend a balance dividend of 4 per cent., free of tax, on 1,320,000 ordinary shares, making, with the interim of 6 per cent. paid last October, 10 per cent. for the year to end-March. In addition, holders of this class will receive £47,960 divisible among 1,320,000 shares, a like amount being distributed as the employés' proportion of profits. The partnership shares are to receive 5 per cent., tax free, as final, making 10 per cent. It is further proposed that the ordinary shares receive £150,039, free of tax.

Continental Tintex and Dye Products.—The statutory report states that the total number of shares of 5s. each allotted is 672,472, of which 580,000 have been allotted wholly for cash. The number of shares allotted as fully paid otherwise than for cash is 92,472, of which 82,472 are part of payment due to vendor under agreement dated February 1, 1929, and 10,000 are allotted to British Tintex and Dye Products under agreement of same date. Total amount of cash received in respect of shares allotted wholly for cash is £131,824. Receipts and payments on capital account and otherwise to April 17, 1929, are as follow: Receipts:—In respect of shares allotted for cash, £131,824; interest, £126; allowance from vendors in respect of machinery, £4,115; total, £136,065. Payments: To vendor under agreement dated February 1, 1929, £61,800; preliminary and formation expenses, £21,560; underwriting commission and brokerage, £9,164; purchase of further rights, £3,000; office furniture, £14; miscellaneous expenditure, £1,529; balances at bankers, in hand and in transit, £38,998; total, £136,065. Preliminary and formation expenses (exclusive of underwriting commission and brokerage) are estimated at £21,560.

The Spanish Olive Oil Industry

At a recent meeting of the Federation of Olive Oil Exporters of Spain the question of the market situation and the cessation of foreign sales came up for discussion. In this connection it was mentioned that the last harvest in Spain amounted to 665,000 tons, while the exports up to the end of August had reached 90,000 tons, the home consumption being 187,000 tons (calculated on a basis of 250,000 tons per annum), and that consequently there remained a stock of about 385,000 tons of last year's crop. Producers state that this year's crop will be on a small scale. The average crop during the five years from 1922 to 1926 was 296,000 tons, the smallest for ten years being that of 1926, with 230,000 tons. Reports received indicate that the olive crop in Italy was normal, those of Tunis, Algeria, and French Morocco very abundant, and those of Greece good, while the crops in Portugal, Palestine, and Syria are said to be poor. The shrinkage of sales abroad is ascribed to the high prices ruling, which drive consumers to buy other oils. This is especially the case in the United States and Argentina.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

NORLAND OIL TRANSPORTATION CO., LTD., 4, St. Mary Axe, E.C., oil importers. (C.C., 27/4/29.) £21 2s. 6d. October 18,

ROBSON, R. AND CO., 68, Hollydale Road, Peckham, polish manufacturers. (C.C., 27/4/29.) £20 8s. March 5.

WRIGHT (E.) AND CO., LTD., 55, Brook Street, Bradford, chemical manure manufacturers. (C.C., 27/4/29.) £11 13s. 1d. March 12.

Mortgages and Charges

*[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case, the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]*

CHEMICAL AND DETERGENT CO., LTD., London, W.C. (M., 27/4/29.) Reg. April 6, £200 mortgage or charge, to J. H. Scott, 31, Westmoreland Road, Bromley (Kent); general charge.

MALEHURST BARYTES CO., LTD., nr. Shrewsbury. (M., 27/4/29.) Reg. April 9, £5,000 debentures, balance of £25,000; general charge. *£71,500. October 17, 1928.

Satisfaction

GRAFTON CHEMICAL CO., LTD., Manchester. (M.S., 27/4/29.) Satisfaction registered April 10, £400, registered August 25, 1922.

Receiverships

"CAMPRO" CAMERAS AND FILMS, LTD. (R., 27/4/29.) J. B. Pittman, of Farleigh House, Lawrence Lane, E.C. was appointed Receiver and Manager on April 5, 1929, under powers contained in debenture dated February 27, 1929.

CELTIC SOAP CO., LTD. (R., 27/4/29.) J. W. Williams, of 5, St. Andrews Crescent, Cardiff, was appointed Receiver and Manager on April 10, 1929, under powers contained in debenture dated February 14, 1928.

New Companies Registered

ALBRIGHT AND WILSON MATCH PHOSPHORUS CO., LTD., Oldbury, near Birmingham. Registered as a "private" company on April 22. Nominal capital, £65,000 in £1 shares (25,000 6 per cent. cumulative preference and 40,000 ordinary). To acquire that part of the business of Albright and Wilson, Ltd., devoted to the manufacture and sale of amorphous phosphorus, sesquisulphide and other sulphides of phosphorus for the match making purposes, and certain of the assets and the goodwill of such part of the said business, etc.

DALE AND CO. (CHEMICALS), LTD., Tyldesley, Lancs. Registered April 22. Nominal capital, £6,000 in £1 shares. Tar distillers, manufacturers of and dealers in tar by-products, oils, greases, paints, varnishes, disinfectants, sheep dips, food preparations, etc. Directors:—H. S. Diggory, Grapes Hotel, Llangollen, N. Wales; J. T. Hackett, 13, Exeter Road, Bootle, Lancs.

THE NORTH-EAST COAST EXHIBITION, 1929.—Registered on April 19, as a company limited by guarantee, without share capital, with not more than 500 members, each liable for £1 in the event of winding up. The word "Limited" is omitted from title by licence of the Board of Trade. The objects are to prepare for, open and carry on, during 1929, an exhibition in Newcastle-on-Tyne, of buildings and articles illustrative of the industries, inventions, manufactures, products, sciences, history, art and material resources of the British Empire, etc. The management is vested in an Executive Committee, the first members of which are:—Hon. Sir Chas. A. Parsons, Councillor A. W. Lambert, C. Irwin, J.P., Alderman David Cairns, Councillor J. Mason, Alderman W. E. Wardill.

PRANADA SYNDICATE, LTD.—Registered April 19. Nominal capital, £15,000 in £1 shares. Manufacturers of and dealers in explosive and other chemical compositions and preparations, cements, oils, paints, pigments and varnishes, paint and colour grinders, etc., and to adopt agreements (1) with Mrs. H. E. Luis, C. M. Chapman and W. R. Ormandy; (2) with A. H. Mercer; (3) with the East Indian Tanning Extract Co., Ltd.; and (4) with T. McArthur. Directors:—E. S. Shrapnell-Smith (chairman), C. M. Chapman, J.P. and H. Green. Solicitors: Bull and Bull, 3, Stone Buildings, Lincolns Inn, London.

THE ZINC MANUFACTURING CO., LTD.—Registered as a "public" company on April 19. Nominal capital, £1,000,000 in 1,800,000 "A" ordinary and 200,000 "B" ordinary shares of 10s. each. To acquire certain licences for the manufacture in various countries under the "Coley Process" of zinc, zinc oxide and other products; to adopt agreements (1) with the N.C. Metal Co., Ltd., Jaime Rose Francisco Guardiola Société Anonyme Holding Hercule, Société Anonyme Exploitations Minières en Tunisie, and F. Wright; (2) with the N.C. Metal Co., Ltd., the N.C. Zinc Oxide Co., Ld., and F. Wright; (3) with Jaime Jose Francisco Guardiola Société Anonyme Holding Hercule and Société Anonyme Exploitations Minières en Tunisie; and (4) with N.C. Zinc Oxide Co., Ltd.; and to carry on the business of manufacturers of and dealers in zinc, zinc oxide and other zinc products, and other metals, minerals and ores, technical investigators, scientific and technical research chemists, etc. Directors:—H. E. Coley, 1, Paper Buildings, London, E.C.4; J. J. F. Guardiola, H. E. Howard, C. A. Morrison, L. Wiese, W. D. Scott-Scott, and C. O. Webb.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us from official sources by Gee and Co., Patent and Trade Mark Agents, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks, and Designs.

Opposition to the Registration of the following Trade Marks can be lodged up to May 10, 1929.

PRINTON.

497,137. Class 1. Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives. I.G. Farbenindustrie Aktien-Gesellschaft (a joint stock company organised under the laws of Germany), Mainzerlandstrasse 28, Frankfort-on-Main, Germany; manufacturers. November 16, 1928. (By Consent.)

FLORANOL.

500,004. Class 1. Chemical substances for use in the manufacture of perfumery. Bayer Products, Ltd., 31 to 34, Basinghall Street, London, E.C.2; merchants and manufacturers. February 14, 1929.

British Company to Utilise Canadian Natural Gas

THE Prime Minister of New Brunswick, speaking before the Legislative Assembly of the Province recently, intimated that British capital is interested in utilising waste gas in the Turner Valley oil field, Alberta, for commercial purposes. He stated that the organisation in question is one of the largest in Great Britain, and its interests go far beyond the development of a carbon black plant. It is proposed to break down the waste gas into simpler compounds and to manufacture therefrom certain unspecified chemicals. The resources of the chemical and research departments of the University of Alberta have been placed at the disposal of the organisation for experiments.